



# HAPPINESS

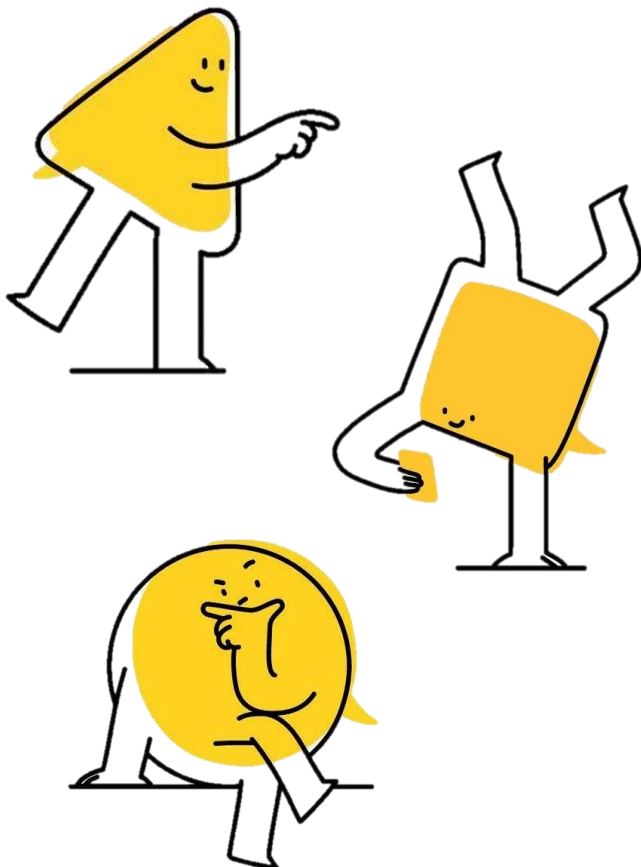
Development with Values

*"It is far easier to draft good plans and frame good policies than to come up with the right strategy and even more difficult to formulate new ones. Small countries like Bhutan can swiftly innovate and implement what other countries might hesitate to pursue or fail to achieve."*

*His Majesty the King*



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## QUINOA IN BHUTAN:

*Possibility in every grain*

## BHUTAN NDI-

*Reshaping Reality,  
Revolutionizing Development*

## WASTE MANAGEMENT TACTICS: NEW AND IMPROVED-

*Reimagining Effective  
Partnerships for Tackling  
Plastic Waste and River  
Pollution project.*

## SUCCESS STORY: NADPM & RCP

# HAPPINESS



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## Three cheers for sense... and all its friends

When they sang the popular tune for the first time in 1964, that ‘It’s a small world after all...’ they had no idea, how ‘small’ it would eventually become by the 2020s. Same for when everyone kept saying, the world’s a ‘global village.’ This here is certainly not talking about how literally the world has shrunk in size. The sign post is directed at the connectedness of worlds that amazingly enhanced communication, connectivity and shared consciousness among world nations and their peoples. All good things ran its course and now we have on our hands a case of ‘too much of a good thing.’ In that scenario such a thing as social media has overpowered life as we know it. There’s definitely a lot of that ‘shared consciousness’ thing going on alright; but it’s starting to make all us wish if there was a little less sharing of that consciousness. Amidst that pandemonium, common sense has become a most rare and prized possession not available for use (sometimes) even to make a simple but discerning decision on the simplest matters. Tact and diplomacy are best left where they belong – with diplomats. It’s an unnecessarily awakened world and it’s unnecessarily awakened to everything unnecessary under the sun. That is why, it’s such cause for joy that there still remain things in this world- matters that people can simply agree upon. On them, they don’t have to ‘agree to disagree’ all the time.

The BES as an implementing partner has teamed up with various stakeholders to start the Reimagining Effective Partnerships for Tackling Plastic Waste & River Pollution project. The DAMC is abuzz with activities to significantly address food and nutrition security. And the GovTech Agency’s NDI is a trail-blazing, pioneering digital intervention that... how do we say it... with chutzpah, ah yes... fast-forward Bhutan’s development as a ‘slingshot into the future.’ Isn’t it reassuring then, that with some things, black is black and gray is an area that has seriously no place for where white and black are clear as day?

Additionally, the exploits and conquests of the National Accelerated Dog Population Management & Rabies Control Program (NADPM&RCP) in the country is a show-cause for evolution of a genuinely concerned expression into a great initiative that demonstrated what ‘can’ be achieved when human compassion, effective policy and stellar groundwork come together. The DGPC meanwhile is great power for the nation and that statement shall be authenticated when you read through to how quite literally it is a conglomerate of power that powers our everyday. Thy reading experience in this edition shall be “vibing” on those settled terms.



## **Quinoa** in Bhutan: Possibility in every grain

No world is without strife. But also, no world is without a hero's victory. Ours is a world (economy) freshly out of a pandemic that battered it every which way possible. Can't say we have come out unscathed from it all; but there were so many victories (small but glorious) to be celebrated. And lessons learnt well, taught by a pandemic that forced it upon us, to learn it or leave it- at our own risk, loss or gain. The world, however, even without a pandemic has relatively always been on the brink; courtesy of global warming, climate change and company, and the likes. The COVID pandemic however helped drive home the point of urgency very much on the lines of make or break, life or death.

Preparedness was the lesson we learnt, collectively, on a global stage, in close proximity with a shared fate in the backdrop. Food security received a bright and shiny spotlight in that time of strife and it was the subject of undivided attention. The renewed realizations have attached a tone of enhanced urgency on the topic that is Food security and self-sufficiency which were always part of priority plans and programs of the country.

On that note let's talk about Quinoa. Present it in the same light as that of the hero we spoke of above. Its benefits goes outside of wetting palates and nourishing bodily systems. Quinoa is being prepped as part of the country's solutions to improve domestic market, explore and navigate international markets (exports). Quinoa is a highly nutritious and abiotic (not derived from living organisms) stress-tolerant crop that can be used to ensure food security for the rapidly growing world population under changing climate conditions. As a 'climate-resilient' crop, it is an easy pick for growers/farmers weighing risks and rewards with what they grow in their fields. Improving the nutritive quality of grains can help reduce the challenges in food security and climate change impacts. Quinoa offers an alternative option to those countries suffering from food insecurity and food shortage. Quinoa with its ease of cultivation (less labour-intensive) is a gender equalizer as more women farmers' participation becomes significant helping them sustain livelihoods independently. So there it is, a hero that provides nutrition and nourishment, addresses gender equality;

## What is Quinoa?

Quinoa is a whole grain packed with nutrients, fiber, protein, and plant compounds. It has many health benefits and is an easy way to add variety to your diet. Quinoa is an ancient South American grain that was largely ignored for centuries.

Interestingly, it was only recently noticed by the rest of the world and hailed as a “superfood” due to its high nutritional content. It is now considered a specialty food by foodies and the health conscious.



poverty alleviation; and climate change – the biggest challenge of our time – while simultaneously operating as an export-enhancer economy-boosting agent – or should we say super hero, after all it is continuously being called ‘superfood.’ Details.

## Quinoa in Bhutan – Cream of the crop

The quinoa cultivated for itself a growing affinity from the countrymen and countrywomen who engaged in growing it and from those who enjoyed it to wet their palates. The Bhutanese love for the crop is evident in the local name, Ashi Heychum that roughly translates to the Queen of Cereals. Despite challenges, the crop has gained increased popularity in recent years with investments in adaptability research and experiments. With its identification as a priority Special Agriculture Product (SAP) of Bhutan under FAO’s One Country One Priority Product (OCOP) Initiative, it is rapidly promoted with introduction of more varieties, productivity enhancement, and product development and marketing.

Given its ability to knit in favorably with existing maize and potato-based farming system, Agriculture Research and Development Center (ARDCs) carried out on-station and on-farm varietal evaluation trials of the introduced Quinoa varieties to assess its adaptability and performance in varying agro-ecological zones since 2015. Later in 2016, six additional new varieties were introduced from Peru followed by another one from India and another through informal source were introduced and evaluated to provide varietal choice in future.

**Quinoa — it flourishes:** With increasing importance given to the nutrient rich quinoa; intensification program in the east was streamlined into annual agriculture development plans through research outreach programs in potential sites, climate smart villages, youth farms and Land Use Certificate (LUCs) sites. With passing years, farmers started to show interest to take up quinoa cultivation with assurance of buyback by the government. Thus the demand for quinoa seed also increased which was met through the ARDC’s basic seed production program and buyback from selected growers in the region.

Quinoa cultivation in eastern Dzongkhag’s modality changed from individual promotional cultivation to community-based production at semi-commercial scale by small scale and medium scale farmers as a part of crop intensification for major cereal crop commodity development program in the 12th FYP.

**Bhutan’s top crop for OCOP:** Bhutan identified and announced Quinoa as a priority crop under the FAO’s OCOP initiative during the regional launch of the Global Action on Green Development of Special Agricultural Products (SAPs): “One Country One Priority Product” in May, 2022. Adopting Quinoa as Bhutan’s OCOP crop would improve food and nutrition security and ensure better income for the rural communities.

Quinoa was selected as a priority crop to enhance food and nutritional security of the Bhutanese people, to diversify the cropping and food basket. The choice is no random pick given the speciality and versatility that

Quinoa exuberates. It is climate-resilient and versatile for diverse agroecology. Its potential as an export crop signals direct benefits of income generation for farmers. And there is every chance to increase production and improve marketing efficiency through technology interventions in the production and value chain. Now that definitely makes it cream of the crop doesn't it.

**Key NCPs:** Bhutan has established Quinoa as one of the key National Commodity Programs (NCPs) to harness its multi-dimensional benefits. The country focuses on varietal screening, improving production management, integrating value addition, and marketing; to diversify the varieties, improve productivity, efficiency, competitiveness, connectivity and sustainability.

**When in Bhutan... Be Bhutanese (Quinoa):** Given the versatile capacity of the Quinoa to adapt to different growing conditions, it's no surprise it has adapted to Bhutan or being Bhutanese. Quinoa has successfully adapted to challenging mountain farming environments of Bhutan where various abiotic stresses like varying precipitation, dry spells, extreme temperature regimes, and frost limit choices in food crops production for farmers.



## QUINOA – A BRIEF HISTORY

Quinoa is the seed of the *Chenopodium quinoa* plant. It is a highly nutritious whole grain that is not actually a grain, botanically speaking. It is therefore called a pseudo grain because it's similar in nutrients and eaten just as cereal grains are eaten. It is native to the Andean region of South America where it was first grown for food some 7,000 years ago. It has gained much popularity worldwide due to its numerous health benefits. For one, it's a gluten-free grain and so people with celiac disease, wheat allergies or those who avoid gluten can consume it. No worries. It is also known for its resilience to a range of climatic conditions. Matter of fact, the UN called 2013 "The International Year of Quinoa" because of its valuable qualities and potential to fight world hunger.

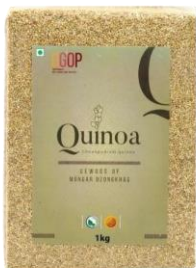
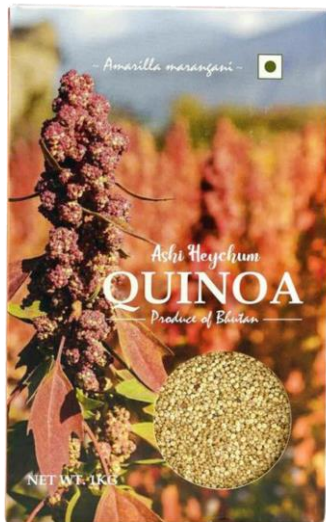
Quinoa is not traditionally grown in Bhutan but its cultivation was introduced in the country. Bhutan is committed to sustainable development and environmental conservation, and explores options to diversify its agricultural practices and improve food security. Quinoa, with its high protein content and adaptability to different climates, comes across as a most attractive option for cultivation in Bhutan's mountainous terrain.

The FAO has compared the nutritional quality of the crop to that of dried whole milk. The protein quality and quantity in quinoa seed is often superior to those of more common cereal grains.

In Bhutan, the cultivation (proper) of known quinoa varieties began in 2015 when the Department of Agriculture with assistance of the UN's Food and Agriculture Organization (FAO) introduced two new varieties (Amarila Marangani and Amarila Saccaca) from Peru. This was done with a view to ensure household nutritional security, to reduce the country's nutritional gaps and thereby also address national food security and income. Besides being a nutrient-dense cereal, it was also introduced/grown given its advantages of being climate-resilient, and economically viable crop across all agro-ecological zones in Bhutan, and later demonstrating promising potential as a niche organic crop for the export market. Since then, the grain is abundantly grown between altitudes of 150masl to about 3500 masl.

A type of Quinoa called *Chenopodium Album* is widely found as a weed while a wild type is said to be cultivated in remote villages in east and central Bhutan but its identification is not yet clear.

As part of the nation-wide test for local adaptability, in 2015 the crop was planted in around 40 acres of land in various dzongkhags like Phobjikha in Wangdue, Khangma in Trashigang, Bitekha and Dawakha in Paro and Yusipang, Phajoding and Dochula in Thimphu among others. Two varieties were identified for high altitude areas that are above 1500 masl, while one variety was identified for low altitude areas. A variety, Ivory 123, was harvested in Haa in September 2016 and some 12kgs were sold at Nu 200 a kg, while some 135kgs was harvested from 20 decimal land in RDC Wengkhar in Mongar. The planting time of the crop above 1500 masl is from mid-March to mid-April while for the areas below 1,500 masl, it is from mid-October to November.



### What makes Bhutanese Quinoa Special?

Ashi Heychum is cultivated across diverse agro-ecological zones of Bhutan, known for her pristine environment, carbon negative status, and the values deeply embedded in organic production. The clean production system involves minimal use of synthetic inputs for assured sustainability and best consumption practices.

Such feasible conditions have infused the grain with a flavor that distinguishes it from quinoa produced in other regions.

Bhutanese Quinoa is slowly gaining popularity in the domestic market and it is yet to make its presence known in the regional market. There is every possibility to make Bhutan a key player in the global and regional quinoa markets. As the demand for 'superfoods' rises, Bhutan has the competitive advantage to be a pioneer in producing the world's best quinoa.

### Quinoa & Environmental Sustainability

Aligned with Bhutan's commitment to Gross National Happiness and environmental conservation, quinoa is an environmentally sustainable and a climate-proof crop. Due to the escalating impacts of climate change, characterized by increasingly severe weather conditions, there is a pressing need to identify crops capable of withstanding these challenges. Quinoa's adaptability to diverse climates helps reduce soil erosion, demands lesser resources, and contributes to agricultural diversity, ensuring both food security and environmental preservation.

### Quinoa in Bhutanese Culinary

In Bhutanese cuisine, quinoa has become a versatile ingredient, enhancing traditional and contemporary dishes alike. From quinoa rice and spaghetti to cookies, salads and chocolate bars, Bhutanese culinary innovation with quinoa remains unexplored but promising.



### HEALTH BENEFITS OF QUINOA

So much to do, so little time to do it in (eating properly included) – That's supposedly us people described famously on the lines of 'keeping up with the fast-paced life.' it's subjective of course – but that's pretty much the dominant reality, if you look around you. That being said, if you really think of it. Quinoa is that food stuff perfect for this age. It's like a one-stop-shop for your body's needs for vitamins, minerals, amino acids, fatty acids, protein etc. all jam-

packed into it. And so, there it is; our savior, Quinoa to the rescue!

As more and more people search for nutritious whole grains to add to their diets, Quinoa fits the bill perfectly. Called the optimal 'super grain' because it is loaded with fiber, antioxidants and many other nutrients it is an easy choice. Its easy-to-prepare method and the fluffy texture make it ideal for any mealtime. Quinoa is a powerhouse of nutrients. Following are some among many of Quinoa's nutrition content and the health benefits they provide.

Lifestyle disease is not a fad to be adored and imitated, but it is an undesired unhealthy event trending on the country's health landscape. People are what they eat; and prevailing statistics from national health bulletins are alarming. Food and drinks come across as the party doing both healing and harming. It should not come as a surprise then that we should choose wisely what to eat and what not to eat. With respect to Quinoa, and from a strictly Bhutanese perspective, consuming quinoa/ incorporating quinoa into daily diet regime will help reduce consumption of high-carbohydrate diets associated with rice, and promote a more balanced health system. On a broader scale, it will help contribute to maintaining self-sufficiency and reducing dependency on extensive rice imports from neighboring countries.

### Quinoa Nutrition Facts – A high profile nutritional profile

The protein quality and quantity in quinoa seed is often superior to those of more common cereal grains like rice, wheat and maize. The crop is referred to as the world's healthiest food and its grain and tender leaves can be consumed. A 100 gram serving of quinoa provides 368 calories, 14g of protein, 6g of fat, 64g of carbohydrate and 7g of fibre.

- ✓ **Anti-Cancer Properties:** Quinoa contains bioactive compounds— phenolic compounds, polysaccharides and saponins. These components may help protect cellular health and prevent certain types of cancer, such as liver and cervical cancers.
- ✓ **Reduces Inflammation:** Quinoa also contains flavonoids and polyphenols. The antioxidant properties of these compounds may help protect cells from oxidative damage and reduce inflammation.
- ✓ **Regulates Blood Sugar:** Many research suggest that eating quinoa to replace other complex

carbohydrates may be a preventive measure against type 2 diabetes.

- ✓ Protein and fiber contribute to quinoa's low glycemic index. Phenolic compounds are also present, slowing carbohydrate digestion to prevent a high post-meal glucose spike.
- ✓ **Helps Digestion:** Packed with fiber, an important nutrient for healthy digestion, quinoa may increase healthy bacterial growth in the gut.
- ✓ **Lowers Cholesterol:** The fiber content in quinoa may help reduce cholesterol and therefore help people manage their cholesterol levels.
- ✓ **Suitable for Celiac Disease:** For those following a strict gluten-free diet, quinoa is the best alternative to gluten-containing grains. Quinoa seeds contain a gluten-free protein with ample amino acids.
- ✓ **Prevents Anemia:** People who do not eat enough iron-rich foods, experience iron deficiencies. Quinoa may compensate for this missing nutrient in a vegan or vegetarian diet. Quinoa presents itself as dietary source of iron along with leafy greens and red meat.



## RECIPES – TRIED AND TESTED, IN ROTATION

### Quinoa salad (gluten-free/healthy)

#### Ingredients

- 1/3 cup coriander, fresh
- 1 cup Chickpeas
- 1/2 Cucumber
- 1/2 tsp Garlic
- 4-5 green chillies
- 1/2 Red onion, small
- 1/4 cup tomatoes
- 2 tbsp Lemon juice and salt to taste



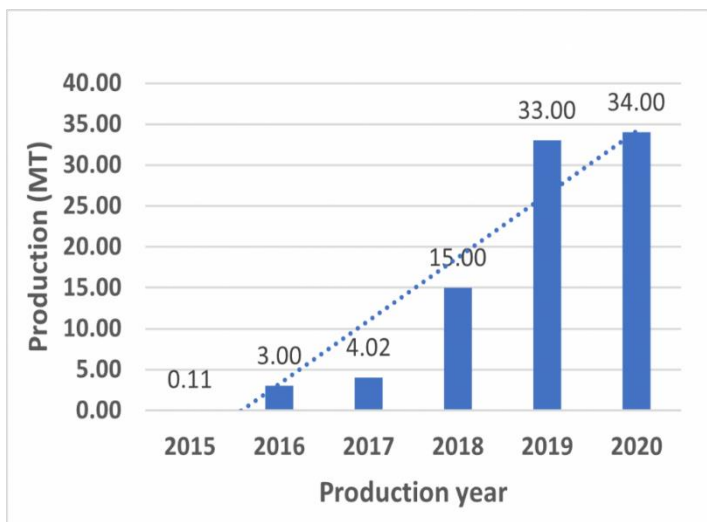
### Quinoa fried rice

#### Ingredients

- 1/2 tsp Ginger/garlic paste,
- 1 cup Veggies of your choice
- 2 Eggs,
- 2 tbsp soy sauce
- 3 cups Quinoa and rice, cooked







Production in (Metric Tonnes (MT))



## THE QUINOA MARKET

### Quinoa – Production Trends

In the five years period (2015 to 2020), the promotion of quinoa in the six eastern Dzongkhags experienced an increasing trend in area, production and income. Ever since the varietal evaluation in 2015 and 2016, the area expansion under quinoa cultivation increased significantly from 64 acres in 2017 to more than 500 acres by 2020. On the flip though, the trends for households growing quinoa fluctuated over the years. By 2020, more than 2000 farmers took up cultivation. Despite variation in number of households taking up quinoa production, the area for the crop followed a gradual increase annually as well.

During the initial years in 2015 and 2016, more than 90 % of the production was procured by research centers and Dzongkhags as seed for crop intensification programs implemented from the Centre and the Dzongkhags. The Food Corporation of Bhutan Limited (FCBL) is the major buyer of the grains from the farmers through market facilitation by the Regional Agriculture Marketing and Cooperative office (RAMCO, Mongar) and Gewog Agriculture Extension Centres in the region. In the five year period of 2015 to 2020, income generated from quinoa increased from Nu 0.010 Million in 2015 to Nu 3.058 million in 2020.

The first stats for quinoa featured in the agricultural census in 2017. For the period, 70 acres of land were harvested, and it yielded nine metric tonnes of quinoa. Two metric tonnes out of this harvest were sold at an average price of Nu 125 and at a median price of Nu 100, collecting a total revenue of Nu 0.3 million.

In 2020, quinoa was cultivated across 273.05 acres of land, bringing in a harvested area of 223.32 acres. This harvest converted to approximately 102.08 metric tonnes of quinoa. As of 2022, the cultivation area was 38.87 acres, with 35.78 acres which harvested a yield of 18.33 metric tonnes. The number of quinoa growers in 2022 was 331, while there were 698 growers reported in 2021. In 2020, there were 1,377 growers taking up quinoa cultivation.



Called the optimal 'Super Grain,' or 'Superfood (more popularly),' Quinoa is a one-stop-shop for nutritious nourishment; in variety and in jampacked gracious quantity



## Factors affecting Quinoa promotion



**Consumption and Marketing trends:** For all its nutritious value and ensuing benefits, Quinoa has gained popularity worldwide; that includes Bhutan too. But how is the highly nutritious pseudo-grain truly trending as a driver of markets? Because while it is popular given all its graces, it's 'traditionally' not a staple in Bhutanese cuisine. Consumption may be on the rise, but it's primarily among health-conscious individuals and those seeking dietary diversity. Cost plays a factor too as Quinoa is generally more expensive than local staple grains in Bhutan. A higher cost may limit its accessibility to a broader consumer/customer base.

In that regard, quinoa consumers in Bhutan are seemingly of two types: the health-seeking individuals and the urban dwellers.

**Health-conscious individuals:** Quinoa consumers in Bhutan (health-conscious individuals) embrace quinoa as a healthy alternative to traditional grains like rice and wheat. This is happening because of increasing awareness about the nutritional benefits of quinoa.

**Urban dwellers/expatriates:** Urbanization commands better access to international cuisines, and so urban dwellers/expatriates are far more exposed to global food trends. Quinoa consumption is therefore popular/more prevalent in urban areas (particularly among younger generations and expatriates). Supposedly, this has contributed to the integration of quinoa into Bhutanese diets, especially in urban centers (like Thimphu and Paro).

OGOP provides a market platform for Quinoa among the other organic products it sells at its outlet. Speaking on OGOP's future plans on Quinoa, Project Manager Nima says "We hope to promote/introduce quinoa as a staple diet for students in government boarding schools to promote a balanced diet." And making an observation on the local quinoa market he says: "A specific challenge in promoting quinoa in the country is overproduction by farmers and a limited consumer base."

Quinoa consumption in Bhutan remains relatively niche compared to staple grains like rice, wheat, and barley. The Quinoa market in that manner of speaking represents perhaps, a small fraction of the overall grain market. Factors such as limited availability, higher cost compared to local grains, and cultural preferences for traditional foods still influence consumer choices. It could be concluded that quinoa consumption is 'on the rise,' but quinoa remains a 'niche product' favored dominantly by health-conscious individuals, urban residents, and those having exposure to international food/culinary trends. These segments are very likely the ones that drive the demand for quinoa products in Bhutan.

As awareness grows, as accessibility improves, as time passes, the popularity of quinoa too may continue to increase. There is growth potential that can be driven by increasing health consciousness, urbanization, and exposure to global food trends.

**Quinoa Production/Promotion trends:** Multiple factors have led to the increasing trends in promotion of Quinoa. The crop has received the highest level of advocacy followed by a consistent on-farm research evaluation, demonstrations and field days undertaken by the research centre and the gewog extension centres in the region. The promotional price at Nu. 100 per Kg raw grain (unhusked) through the buyback mechanism was instituted by the Ministry of Agriculture & Livestock (MoAL) and was mandated to FCBL and RAMCO, Mongar and linkages to shop outlets in Thimphu mainly the convenient stores and the One Gewog One Product Shop Outlet (OGOP) outlet providing market opportunities. And most importantly, the promotion of the crop is followed up initially with the technical assistance and start up seed supports from FAO through the Department of Agriculture and ARDC Yusipang and the promotional programs in partnership with the

European Union Climate Change Adaptation Programs of MoAF, RGoB.

In the eastern Dzongkhags, the introduction of the crops timed with the inception of the ongoing Commercial Agriculture Resilient Livelihoods Enhancement Program (CARLEP-IFAD/MoAF) in the region which opened up collaborative programs that's supported seeds, small machines, awareness and training programs through the Crop Intensification and diversification component aimed to enhance resilience to climate change impacts through production enhancement and income generation.

Quinoa is gradually adjusting into the maize based farming systems predominant in the six eastern Dzongkhags creating an opportunity for farmers in the region to bring nutritional improvement, livelihood enhancement and enhance climate resilience. However, in order to achieve the maximum potential from growing this crop, observation shows that the promotion of this crop needs consistent monitoring, improve cultivation practices especially irrigation and soil fertility with at least farm yard manure applications, mechanization and processing. Experimental yields of 0.750 t/aces to 1.1 t/acre and average farmers yield of 0.5 t/acre to 0.6 t/acre are reported.

Further production should focus on commercially acceptable varieties such as the Amarilla marangani (Ashi Heychum-AM), Amarilla sacacca (Ashi Heychum-AS) and DoA-1-2015 (PMB) (Ashi Heychum TW). Research centers should continue to fast track some additional promising varieties with higher market preference to enable diverse choice for growers and consumers. Finally, a market based production planning and enterprise development through a value chain intervention targeting creation of committed growers linked to processing, value addition enterprises will not only take the crop further into the region but will ensure a major livelihood source for small scale growers and enterprises.

The National quinoa Program at ARDC Wengkhari is on board for a market-based production planning in collaboration with the Regional Agriculture Marketing and Cooperative Office.

The intensification of quinoa in eastern Bhutan is currently supported through partnership with the Commercial Agriculture Resilient and Livelihoods Enhancement Program (CARLEP) supports to ARDC Wengkhari and the six project Dzongkhags.

### Quinoa vs. the Ingrained favorites: Old is gold but Quinoa must break the mold



Two things – the presence of long time favorites (traditional staple diet) and insufficient awareness - are seemingly keeping the goodness of quinoa from flourishing prosperously and thereby its commercial successes at bay. Introducing a relatively new entry like quinoa faces some resistance due to cultural preferences and habits. Other dynamics are certainly in play if we are talking about such things as establishing a smooth export channel across borders (regionally) and across continents (internationally). Within these prevailing conditions, Quinoa as the new baby is getting a lot of attention but remains wanting actions that would solidify its presence across meal tables while seeking to become a prominent export item.

The MoAL has taken significant measures nationwide to collaborate with farmers growing quinoa, especially in its production. Likewise, relevant government agencies made efforts to explore markets for quinoa within Asian countries. Having put in much work, there however remained much more yet to be done. It became apparent that quinoa is not widely known or favored among many consumers, and there remains much to be done on the long road ahead to educate people about its diverse nutritious benefits for a healthy lifestyle. “Despite exploring markets in Japan, Bangladesh, India, Singapore and Thailand, it was learned that consumers are deterred primarily by high prices. This has hindered penetration into international markets,” says the head of Marketing at the FCBL Ugyen. According to a Manager at the CSI Market in Thimphu, Sangay; in their attempts toward exports (of any product and not strictly quinoa) the presence of a formal channel or entity – bonafide and properly established – on two sides is becoming more and more the inevitable for smooth transitions in export.

Well, that's talking about selling outside the country. The in-country story is a narrative on the lines of; a business observing moderate success but remains one that is in anticipation of an amazing take-off amazingly once a dedicated customer base multiplies. That is happening through channels formal and informal such

as the advocating efforts of the DAMC or Department of Agriculture Marketing & Cooperatives; agencies like FCBL, non-government entities like OGOP and private marketing partners. The good old word of mouth meanwhile is the casual channel operating from every conversation to conversation, from person to person putting in the proverbial ‘good word’ for quinoa.

At the OGOP outlet in Thimphu, quinoa (priced 240 per packet) has a dedicated shelf and Sales In-charge Passang says: from the 30 or so packets of quinoa regularly supplied to it from their packaging unit, sales frequency range anywhere from 2 to 3 packets a day to 20 packs a day. “It is a popular item among customers.” Nima a Project Manager at OGOP says, “OGOP only promotes naturally grown produces to meet organic certification.” OGOP provides market platform for quinoa in collaboration with Dzongkhag Agriculture sectors and ARD, Wengkhari.

Quinoa has been on sales since 2018 at the OGOP and sales are seeing a positive frequency with sales for the first few months of 2024 already rivalling that of annual sales figures of previous years. This is especially true for 2022 and 2023 – the years that took massive hits from the Covid-19 battering ram.

At the CSI Market sales are “good but not great,” says Manager Sangay who reflected upon a pre-Covid time when Quinoa stocks were replenished as much as twice in a month. Sibjam a private marketer meanwhile has put on hold its quinoa marketing. Expectations in sales frequency is a reason.

**Battle it must do with the Big Three:** Rice, Wheat, Barley are traditional staples. It wouldn’t be a stretch if you said they are as old as nation’s culture and tradition. You might go as far as to say they are ‘ingrained’ in the everyday Bhutanese diet. Quinoa is popular and has every potential and the making to reach a level equal to that of the holy trio aforementioned. For now, quinoa remains a fairly new entry and has to engage huge competition and fierce loyalty to enter the fray, break the mold (of those loyal consumers), secure a seat at the high table and ensure a free flow in preference and demand.

A word that keeps doing the rounds is ‘limited awareness and knowledge among consumers.’ And concluding from that is the knowledge that people simply don’t know enough about its nutritional benefits, and how to cook or incorporate it into their diets. Trailing with that is the perception ‘Quinoa is a premium or expensive product compared to traditional grains or cereals.’ This could deter some consumers particularly those with lower incomes, from purchasing it. There is also the matter of local competition in the truly local sense of the word. Locally grown staples such as rice, wheat, and barley are the cereals of ages

**Farmers, growers, buyers, marketers, the DAMC, and the market itself. Quinoa as a venture, as a project is primed for success, planned for successful accomplishment of manifesting goals on paper, to a successive series of very, very telling actions.**

and they are deeply ingrained in Bhutanese diets. Convincing consumers to switch to quinoa or award it the same level of devotion requires a sway in loyalty to these traditional foods.

**Difficult, Maybe. Impossible, No:** Addressing challenges may require a comprehensive approach that involves consumer education, market research, partnerships with local farmers, government support and innovation marketing strategies tailored to the Bhutanese context.

For starters, efforts are on to educate consumers about the nutritional value and versatility of quinoa. Strategies include: conducting informational campaigns through various channels to raise awareness about the nutritional benefits of quinoa and its versatility in cooking; developing and sharing a variety of quinoa recipes to showcase its versatility in dishes ranging from salads and soups to main courses and desserts; collaborating with educational institutions and community centres to incorporate quinoa into educational programs and cooking classes aimed at students and community members.

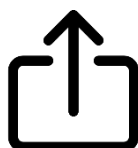
Collaborating with local farmers to cultivate quinoa involves several key points ranging from assisting farmers in accessing markets for their quinoa produce by furnishing market information, connecting them with buyers, and facilitating sales agreements. Some collaboration involves supporting farmers in adding value to their quinoa produce through processing and packaging, which can increase the profitability of their crops.

Organizations can provide training and education to farmers on best practices for quinoa cultivation, encompassing soil preparation, planting techniques, and post-harvest practices. FCBL can work to integrate Quinoa into Bhutanese culinary traditions and promote its acceptance as a complementary staple alongside traditional grains like rice and wheat. A focus on adding value to quinoa products – making flour, and other finished goods from flour, such as cakes, biscuit, and noodles – are options right around the bend.

In terms of capturing markets and boosting exporting potential; providing financial support can help agencies implement initiatives aimed at promoting quinoa cultivation and sustainable agriculture practices in

Bhutan. Assistance to access international market for Bhutanese quinoa products can expand market opportunities and enhance the sustainability of quinoa production in Bhutan. Raising awareness about the importance of sustainable agriculture and the nutritional benefits of quinoa through advocacy campaigns, media outreach, and educational initiatives can support ongoing efforts and generate public support. Supporting efforts to strengthen the quinoa supply chain, including logistics, processing infrastructure, and quality assurance systems, can improve the efficiency and competitiveness of Bhutanese quinoa products.

hailed via various testaments from satisfied palates. Quinoa being adopted as a favorable crop by women farmers have made it into something of a tool for women empowerment. And while we consider cross-cutting benefits and effects, we can conclude that it alleviates the impact of climate change, facilitates environmental conservation, and helps poverty alleviation. Quinoa adoption has brought about transformative changes in rural communities in much of the eastern region, particularly in areas with limited flat terrain for cultivation of alternative cash crops. Examples are the villages of Trashigang such as, Thrimshing, Drametse and Narang. On a national level; the cumulative benefits manifest in the form of strengthened economic activities by way of boosting the domestic market while presenting a good case of exports to markets beyond borders and internationally.



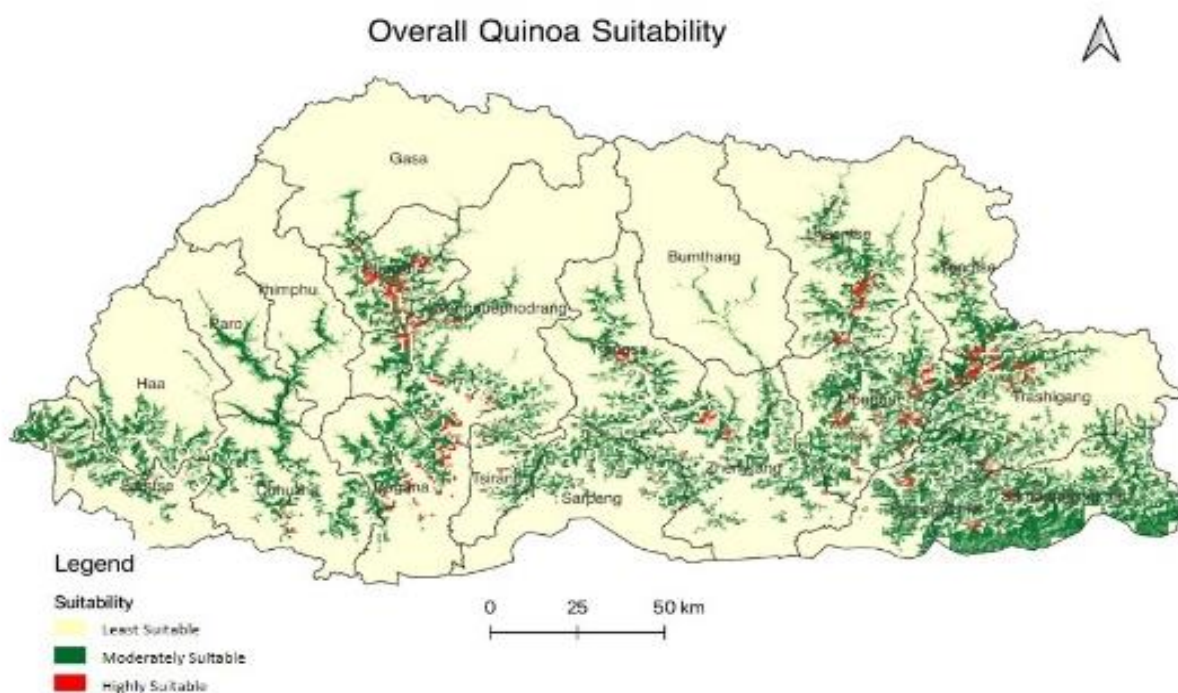
## QUINOA – ROGUE GRAIN ON A STRAIGHT PATH

...to nourish a nation and its people

For a grain that is dubbed ‘not a grain,’ Quinoa continues to hold its world of aficionados in awe of it. It has comfortably carved for itself a niche as a ‘pseudo grain,’ outshining many of the actual bonafide grains in the world of legitimately constituted grains. Now, that is literally going against the grain (or grains in this case). The Quinoa therefore is the unconventional breaker of conventionally established molds. For Bhutan to station it as its choice item to improve food and nutrition security is sage advice put into action. It shall perhaps aid the nation in breaking its own mold (as an import-heavy nation) to exporting more. The dexterity and versatility of its ingrained properties is already authenticated through cultivation, and harvest, its promise of nourishment and taste continue to be

### Quinoa – Against the grain (technically) but 100% For women

See what the Labour Force Survey Report 2022 says: The agriculture sector employed 66,000 women (approx. and outnumbered men by about 20,000. Yay! Chalk one up for the women folk, right? But on the other hand – maybe not! There’s a classification called “contributing family workers in agriculture.” It’s a euphemistic way of acknowledging women’s participation/engagement in the sector but highlighting inescapably that women’s participation/engagement do not result in monetary compensation. And hence, by that token, out of the approximately 66,000 women “engaged” in agriculture, around 20,000 were employed as “contributing family workers in agriculture.” Now that’s not very encouraging for the “contributing” women. And it’s definitely not





doing much for the Gender Parity banner we have had fluttering (metaphorically speaking).

Quinoa, that grain which is not really a grain (botanically speaking), has definitely come through for the women folk. Given its inherent qualities/properties that complement and enhance women’s productivity in the farm; it has enabled/empowered women to work on the farm with comparatively little or no male assistance. Considering one as representing the many with her; take a look at Jamyang Choden in Bartsham.

Jamyang Choden is a farmer. And uh... she’s employed as an (ahem...) – “own-account worker.” Now if you refer the category above-mentioned that is – ‘contributing family workers in agriculture.’ This is a grade up and a big deal.

Being an Own Account Worker indicates that Jamyang works on her “own farm” and is “self-employed.” It means she handles all the “financial aspects” and “provides” for her family. And indeed, using the earnings from the harvest, Jamyang is able to purchase school supplies for her two children, and then some.

“Quinoa earnings have been invaluable, especially for small-scale farmers like me which is why increasing its price is crucial,” Jamyang Choden says in a media coverage themed on ‘women in agriculture’ bringing to fore how quinoa cultivation involves minimal labour-intensive tasks. Jamyang cultivates quinoa on about 25-decimal land. Her land. She started growing quinoa about five years ago. She manages, all by herself, the entire process of cultivating quinoa—which entails planting saplings in August to transplanting them by

September and harvesting them between December and January.

Taking note of the growing number of women in the agriculture sector, Pema Lhamo the Gup of Nubi Gewog in Trongsa sees strategic advantage in ‘feminising’ the agriculture sector. Feminising the occupation hints at introducing farm machinery tailored to women’s needs and cultivating crops that are easier to grow/manage. An emblem of women empowerment herself, Gup Pema Lhamo in a local media coverage says that Introducing easier-to-grow crops like Quinoa that are women-friendly, and use less bulky machinery would significantly benefit women farmers. Coincidentally, Quinoa, known for its “ease of cultivation,” “low labour requirements,” and women-friendly work details, does happen to be cultivated in the lower regions of Trongsa.

Bhutan's journey with quinoa symbolizes a commitment to sustainable agriculture, culinary innovation, and economic growth. It is also a priority under Hand-in-Hand Initiative, where Bhutan will begin to produce in more than 4000 acres, investing close to USD 15 million to reach annual production of 2360 MT. This is just as an initial part of large-scale production to, not only to improve food security but also to diversify income opportunities for farming communities. With financial and technical support from FAO in its value chain development, it will be one of the crops that will be registered under Geographical Indication (GI) and Geographical Identification for Environmental Sustainability (GIES).

**Reference:** DAMC; <https://carlep.gov.bt/elementor-3411>; Kuenselonline; BBS; HealthlineMedia; MedicineNet; OGOP; FCBL, picture courtesy- DAMC.



# BHUTAN NDI -

## RESHAPING REALITY, REVOLUTIONIZING DEVELOPMENT

*Blockchain, Fintech, Quantum Computing, Artificial Reality, Virtual Reality, Metaverse, Robotics, Machine Learning and Web 3.0 are just some of the rapid and sweeping changes brought about by technological advancements that we are beginning to see. Breakthroughs in nanotech, biotech and genomics will transform the future. What deeply concerns me is whether our people will be in a position to take advantage of these opportunities. Or if we will be left behind due to our inability to adapt.*

**-- His Majesty the King, National Day 2021**

As the lines blur between physical and digital worlds, as life continues to happen, as much in the digital sphere as does in the real world, NDI or the National Digital Identity is an exceptionally well-timed introduction in the Bhutanese society. Backed by sound technology, the NDI platform helps individuals represent themselves across digital landscapes as they provide identity-related information online and operate with an assured and reassured confidence, courtesy- of a national initiative that is roped in for the long haul to benefit and progressively develop a nation and its people.

NDI is poised to sweep us off our collective feet as it changes our world by effectively transforming how we represent ourselves across digital landscapes when we avail services, travel, make payments, avail loans, transact real estate, authenticate personal (life) details etc.



The NDI shall be hugely instrumental in enhancing services provided in areas including but not limited to banking, finance, insurance, education, telecommunications, health, tax and utility on issuer and verifier platforms along with government regulated services.

The world has changed so much and it continues to change. That's one way of saying, change waits for no one, and that one and all better adjust and adapt; or become irrelevant. On that, His Majesty the King's statements in the national addresses objectively hit hard and hit fast – change or get left behind, adapt or get left behind. The birth, life, and times of the NDI in action leaves no doubt Bhutan will not be left behind. As governments across the world move towards digitization and digital ID systems, the NDI is a globally unique model that puts the country on the world's digital map.

## NDI – Conquering them Digital terrains, digitally

By April 2024, over 80,000 users have requested for Foundational IDs through the Bhutan National Digital Identity (NDI digital wallet). This represents a good reception and adoption of the digital wallet.

The launch of NDI in October, 2023 marked a historic moment in the country's digital transformation. Only months after His Royal Highness Gyalsey Jigme Namgyel Wangchuck became the first digital citizen of Bhutan on February 21, 2023. The honoring of His Royal Highness the Gyalsey as the first digital citizen was the beginning of a cascade of activities, innovation, and debate which set the tone for Bhutan's adoption of Bhutan NDI and the beginning of its unprecedented strategy to leapfrog and become a pioneer in the digital global economy.

The National Digital Identity Project was initiated by the Royal Command and forms the foundation of Bhutan's national digital transformation strategy, the Digital Drukyul Flagship Program, which will enable an inclusive and connected tech service ecosystem across the Kingdom. The Bhutan NDI project is led by the Government Technology (GovTech) Agency in close cooperation with Druk Holding & Investments (DHI), the commercial arm of the Royal Government of Bhutan.

### Purpose of the NDI

- Give Bhutanese citizens a cutting-edge system to seamlessly, safely, and conveniently access government and commercial services.



A nationwide program to collect biometrics for the creation of digital identities was launched in Oct 2021





Authorized entities *issue* identity-based verifiable credentials & certificates into your Bhutan NDI wallet.



Government & business service providers *verify* the credentials/certificates you share through your Bhutan NDI wallet to grant you access to their portals and provide their service.

- Future-proof national digital infrastructure by creating a long-term, resilient digital identification model.
- Inspire a connected tech service ecosystem that reaches all Bhutanese from remote rural communities to urban centers, ensuring equitable access to services.

### Bhutan NDI Wallet

Bhutan NDI Wallet is a mobile application that receives, stores, and exchanges verifiable credentials to facilitate trusted digital interactions. Designed around the World Wide Web Consortium (W3C) global decentralized identifier standards, Bhutan NDI aims to:

- Build identity as the cornerstone of every digital interaction.
- Foster a harmonious digital ecosystem for seamless delivery of government & business services.
- Provide verification and authentication as services for individuals and service providers to meet compliance requirements.
- Innovate to meet the demands of an evolving landscape of digital transactions.



### Bhutan NDI – Identity at its center; Trust at its heart

Two aspects justify NDI as the cutting-edge inclusive digital ecosystem founded on high trust-levels. ‘Trust’ is a highlight criterion here in light of increasing data privacy concerns – a worldwide issue. Bhutan has pursued two concepts in this regard to broaden the scope of personal data sovereignty. Number one – The Self Sovereign Identity (SSI) which gives individuals control over the information they use to prove who they are when providing identity information online. It is worth the mention here to say that, Bhutan is the first sovereign nation to adopt SSI-based digital identity at a national level in the world. Number two – NDI uses Decentralized IDentifiers (DIDs); a type of globally-unique identifier that enables an entity to be identified in a manner that is verifiable, persistent (as needed), and does not require the use of a centralized registry.



It is the nation's young and budding that will see the promising future, that is NDI come to fruition and therefore the NDI initiative is every step of the way a guarantee for the present while being an insurance for the future.



## Bhutan NDI Wins Award for Innovation in Identity & Data at The Mobile Ecosystem Forum 2024

Bhutan National Digital Identity was awarded the best innovation in the category 'Identity and Data' at the 19th Mobile Ecosystem Forum Summit (MEFFYS) 2024, held in Barcelona, Spain. The MEFFYS Awards celebrate excellence, innovation, and ingenuity in the mobile ecosystem.

Bhutan NDI was independently nominated by the Chief Executive Officer at Identity Praxis, Inc. Mr Michael Becker, for the most innovative mobile authentication technology. Bhutan NDI, designed on the principles of self-sovereign identity (SSI), impressed voters on a panel of industry leaders with its capabilities including:

- Passwordless single sign-on feature for government and commercial digital services
- Zero knowledge proof-based verifiable credential exchange
- Electronic know your customer (eKYC) proof to meet regulatory mandates.
- Cross-border collaboration for technology design and development.
- A blockchain layer that prioritizes security and privacy.

"We are incredibly proud to receive this prestigious award from the Mobile Ecosystem Forum. This recognition is a testament to the hard work and dedication of our talented team, who continuously strive to innovate and create solutions that make a meaningful difference in the identity and mobile industries while making a meaningful difference in the lives of our citizens as envisioned by His Majesty the King." – Secretary of GovTech Agency, Jigme Tenzing



## Big things afoot

As the NDI rolls out into action, there’s a lot of buzz surrounding this tech-powered techno wonder. People are as much in awe of it, as much as they have a cloud of fascination and enigma looming over their collective minds- as they try to properly wrap their head around it. Now unlike other snazzy technological inventions that come and go catching the attention of only a select few aficionados; this one is digitally tailored for all of us, and as such, ‘all of us’ should most significantly get on board. In a nutshell – NDI as this digitally transformative development concerns every single one of us (as clearly says the name – “National” Digital “Identity”).

Data privacy is a global hot topic. It’s a topical issue anytime it’s mentioned or discussed; and always discussed as a burning issue. In the case of NDI, people can rest assured given the aspects of Digital Identifiers (DIDs) and the Self-Sovereign Identity (SSI). Discussed at the highest level of law-making institutions in the country, the NDI Bill was introduced, discussed and passed as the NDI Act of Bhutan in parliament.

The National Digital Identity Act 2023 is an assurance that grants every citizen the fundamental right to privacy and control over their personal data. Passage of the Act makes Bhutan the first sovereign state to implement a comprehensive decentralized digital identity framework, addressing key concerns by empowering its citizens to protect themselves in the digital age.

The Act embodies the following core objectives:

**Empowerment:** The Act empowers citizens by providing easy access to essential government and business services, promoting digital inclusion for all.

- **Data privacy:** Citizens maintain control over their personal data, selecting which entities they authorize to access their information, thus ensuring privacy and safeguarding sensitive data.

**On 19 June, 2023, Members of the National Assembly overwhelmingly voted in favour of the National Digital Identity Bill, and on 7 July, the Act was unanimously passed by both the National Council and the National Assembly, a sign of Bhutan’s united resolve in seizing the opportunities provided by a digital future. The NDI is a cornerstone of the nation's digital economy, ushering in an era of fast, secure, and trusted interactions between individuals and service providers. The NDI will give all Bhutanese citizens equal access to government, commercial, and banking services.**

- **Data security:** The Act establishes a highly secure National Digital Identity system, leveraging decentralized public key infrastructure to enhance the security and integrity of personal data.
- **Inclusivity and accessibility:** The NDI Act promotes inclusivity, accessibility, and equity by catering to individuals with limited digital literacy, financial stability, and with special needs.

To ensure interoperability in the country’s digital infrastructure, Trust Registry Service is core to the NDI ecosystem. All participating agencies (government and enterprises) are onboarded into the NDI platform through API/SDK integrations. Additionally, the NDI Act includes sections that legitimize transactions/interactions completed with verifiable credentials presented through the Bhutan NDI wallet. To drive adoption, the Bhutan NDI team/Office works closely with the Desuung Organization to involve all 205 dzongkhags in Bhutan.

## NDI — Self-Sovereign Identity and the flowing benefits

Bhutan NDI provides a single digital identity for each Bhutanese citizen across all public services. This allows for single sign-on (SSO) and seamless integration of that identity across services, physical space, and time. Bhutan NDI leverages the safety and security of blockchain technology. Simply put, it means that the state lacks a complete account of an individual's identity or information. This puts the citizens, rather than the state, in control of their identity and their information.

- Individuals have the right to control and store their data at will, enhancing the social contract between states and citizens and promoting trust and collaboration across society by empowering citizens to access public services and monitor and control their own data.
- Regardless of their location in the world, the self-sovereign identity framework allows Bhutanese citizens to access all public services through their Bhutan NDI wallet.
- Bhutan NDI will enable the 'unbanked' population who struggle with banking services, to save, invest, and transfer money with unprecedented ease, opening up new and exciting opportunities for the Bhutanese economy. This will very likely prove favorable in accessing various other public services in the same context of NDI easing up previously faced difficulties.
- 'Digital guardianship' means that Bhutan will be able to close the 'digital divide' between those who have access to online services and those who do not. Through the use of a printed biometric verification cryptograph, those with limited economic means, elderly, or otherwise unfamiliar with technology will be brought into Bhutan's burgeoning digitised society and increasingly digital economy.
- Enhanced access to public services, opportunities for banking, and greater civil participation through ease of accessing government services promises to renew the vitality of Bhutan's civil society and make good on the promise of Gross National Happiness. All of this is an effort to promote inclusivity and accessibility, one of the core tenets of the government's approach to a digitally connected society.



13 October, 2023 – Bhutan marked a historic moment in its digital transformation journey with the nationwide launch of the Bhutan NDI. The NDI is a cornerstone of the nation's digital economy, ushering in an era of fast, secure, and trusted interactions between individuals and service providers. The NDI will give all Bhutanese citizens equal access to government, commercial, and banking services.

This achievement follows the inauguration of the NDI project earlier this year when His Royal Highness Gyalsey Jigme Namgyel Wangchuck became the first digital citizen of Bhutan on February 21, 2023.

The NDI Project was initiated by Royal Command and forms the foundation of Bhutan's national digital transformation strategy, the Digital Drukylul Flagship Program, which will enable an inclusive and connected tech service ecosystem across the Kingdom. The Bhutan NDI project is led by the GovTech Agency in cooperation with DHI.

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***"The National Digital Identity Act represents a critical foundation for Bhutan's digital transformation, fostering a service-oriented economy poised to seize the opportunities presented by Web3. Bhutan is steadfast in its commitment to accelerating responsible Web3 technology development and adoption, underpinned by regulations that safeguard privacy via innovative identity verification methods rooted in the principles of zero knowledge proof." – Chief Technology Officer of DHI, Jacques Von Benecke***

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## NDI – A slingshot into the future

Catching up is perhaps all that Bhutan has done in all its developmental years; although its formulated plans, programs and various strategies may not have overtly spelled it out in exact terms. But being a late entrant in the development game, every other thing is 'introduced' to Bhutan when elsewhere that introduced thing has sufficiently run its course and is due for an upgrade, a new version etc. We can take the examples of Television and Internet 'introduced' to Bhutan only in 1999, at the close of a millennium; the example of Mobile telecommunications 'introduced' to Bhutan in the year 2000. While the described scenario may have been presented to be viewed as such a downer, it does at the same time signal dawn of possibilities, wherein the country planting seeds of possibilities has now started sprouting fruits of its efforts to speed up development by harnessing the goodness of technical and digital advancement.

And thus, the NDI is that slingshot that will catapult Bhutan into a future it has envisioned, get it there at a faster pace. Bhutan NDI has its favorable technical traits to do that. The biggest advantage however remains that it is His Majesty's envisioned reform for the nation's future. His Royal Highness the Gyalsey's onboarding as first digital citizen, demonstrates that Bhutan's digital future is both vital and deeply personal for His Majesty. It reiterates His Majesty's confidence in the country's digital infrastructure and his conviction

**With NDI, individuals have the right to control and store their data at will, enhancing the social contract between states and citizens and promoting trust and collaboration across society by empowering citizens to access public services and monitor and control their own data**

that Bhutan's young people will be the ones who make good on the slingshot into the future which Bhutan NDI represents. To put it more in line with- and in coherence with current tempo of Bhutan's trajectory of development – the Bhutan NDI is most suitably created to match Bhutan's unique qualities. Digital access to possibilities perfectly complements the physical limitations of Bhutan's geographically challenged characteristics.

A leap into the future is very much possible digitally, using all the goodness, the soundness and effectiveness of technology and innovation that befits a digital venture. After all, haven't they been saying all this time – "the future is digital, the future is digital..." Well... the future is digital and Bhutan has arrived.

**References:** *Bhutan NDI; GovTech; Kuenselonline.*



## WASTE MANAGEMENT TACTICS: NEW AND IMPROVED

Thimphu, a quaint little beauty of a valley amidst awe-inspiring mystical mountains; Thimphu, a picturesque capital city urbanized and modern in many sense of the word but so traditional and rooted in culture and history. Thimphu, a melting pot of people and culture - a hub as much as it is a hotspot for economic possibilities. While Thimphu is the epitome of the nation’s development process, it is also emblematic of its trade-offs. To directly count from the pool of ills, there’s waste, littering, pollution and the horde of misery it brings – health-wise, environmentally and aesthetically.

Specifically speaking – let’s talk about plastic. It’s the age of convenience and we just absolutely must have plastic. It’s everywhere. Bhutan is one of the fastest urbanizing countries in south Asia, its share of urban population is projected to reach 56.8% by 2047. The booming urban population would mean a boom in plastic pollution too. Bhutan has waged its little fight against plastic pollution: the fight may have lost steam along the way, perhaps even come across as a losing battle, **but the fight never took a break.**

The Bhutan Ecological Society (BES) joining forces with the Gross International Nature and Clean Bhutan in



Inception of the Reimagining Effective Partnerships For Tackling Plastic Waste & River Pollution project coinciding with Global Recycling Day - 18 March, 2024



The project has the potential to divert approximately 422 tonnes of plastic waste from entering the landfill. This diversion is expected to help eliminate around 1,266 tonnes of CO2 emissions annually. Plans are also to install 20 filtration systems and provide waste bins and storage facilities. The project’s potential to reduce the need for imported bricks and pellets aligns with the goal of reducing plastic waste.

collaboration with numerous stakeholders has initiated the **Reimagining Effective Partnerships for Tackling Plastic Waste and River Pollution project**. This project is part of the Plastic Free Rivers and Seas for South Asia (PLEASE) initiative, funded by the World Bank and implemented in collaboration with the South Asia Co-operative Environment Programme (SACEP), with support from UNOPS Department of Environment & Climate Change Thimphu Thromde Kawang Gewog Gross International Nature Clean Bhutan.

PLEASE Project is the first and largest project of its kind to combat plastic pollution ending up in South Asian rivers and seas. The main objective is to strengthen innovation and coordination of circular economy solutions to plastic pollution flowing into South Asian Seas.

## Plastic – it’s not so fantastic anymore

Bhutan has seen a surge in plastic consumption over the decades. As per the National Statistics Bureau’s 2020 survey, plastic waste comprises 17.1% and paper 15.8 percent respectively in the country’s overall waste load generated. Thimphu and Phuentsholing are the top plastic waste producers. Collectively they are accountable for 18,000 tonnes of plastic consumption per year while generating 14,000 tonnes of waste yearly.

Bhutan took a significant step by imposing a ban on plastic bags in 1999. This ban has helped reduce plastic bag usage, but challenges remain due to non-compliance. Awareness campaigns conducted by the government and NGOs educate citizens about plastic pollution. These efforts emphasize the importance of responsible plastic use and disposal.

However, recycling infrastructure that enable plastic to exist in a circular economy is limited in Bhutan. Thus, investments in recycling plastic waste need expansion. Plastic leakage poses a growing threat to Bhutan’s environment and aquatic ecosystems. There have been attempts to address the aforementioned challenges. For instance, the Memelakha Landfill (which has long passed its expiration date) has been expanded and modified numerous times since 1994 to increase its lifespan and safety. Modifications include the installation of vent and leachate pipes, and the construction of a leachate collection tank. The Zero Waste Bhutan app which tracks waste-related offenses recorded 436 offenses and 369 incidents of waste-related issues as of March 2024.



The project aims to involve over 1,500 beneficiaries, with a commitment to ensuring that at least 50 percent of participants come from marginalised sectors of society, including youth and women from different areas. The perimeter of its focus is on eight specific communities: Taba, Jungshina, Royal Body Guard, Dechencholing HSS, Kawang Gewog, Kuzugchen MSS, Tango, and Dordena Buddhist College and Pangrizampa.

## Reimagining Partnerships for Plastic Waste Management



Bhutan has ambitiously pledged to reduce waste production by 80% by 2030. The vision of the National Waste Management Flagship Program is to realize Zero Waste Bhutan by 2030, in line with the National Waste Management Strategy 2019. The overall goal of the National Waste Management Strategy (adopted in 2019), and the Waste Management and Stray Dog Population Control flagship program (launched in January, 2020) is to achieve Zero Waste Bhutan whereby the current trend of disposing over 80% of solid waste to the landfill is reversed to less than 20% by the year 2030 based on the principles of circular economy. However, concerned stakeholders and experts are of the view this promise might not be kept; at least not at the current pace of prevailing initiatives. The emphasis is therefore on collaborative efforts from every individual. The Project couldn’t be timed better to make an appearance than now.

This combats the pressing issue of plastic pollution by implementing innovative means to intercept and put plastic waste into the circular economy. Within the two targeted areas of the WangChhu watershed (Bhutan):



The Memelakha Landfill (which has long passed its expiration date) has been expanded and modified numerous times since 1994 to increase its lifespan and safety.



The Wangchhu river watershed in Thimphu is highly contaminated by plastic pollution that now imposes multiple threats to biodiversity, ecosystems; and human health and well-being.

Thimphu City Corporation, and Kawang County, the project will provide plastic waste management infrastructure, mainly: recycling hub that converts plastic waste into sustainable bricks and pellets;

1. Distribution of waste bins and establishing facilities for segregating plastic waste; and
2. Stream channels will be fitted with filters to prevent plastic waste from entering the river.

In tandem, the project has a major emphasis on partnership building to empower, give ownership and leverage joint resources across participants and stakeholders. This involves:

1. Advocacy workshops on waste segregation that provides skills, experiential learning (field visits) and resources (such as the Household Level Waste Management Advocacy Toolkit) around plastic waste management.
2. Policy advocacy with local government including Thimphu Municipality, hotel associations.

Lastly, the project strives to expand the role of women and youth in project administration and supervision. This involves:

1. Highlighting the role of women and youth in plastic waste management (engagement of institutions such as the Royal Bhutan Army cantonment and schools)
2. Highlighting economic opportunities in the waste management sector as well as destigmatizing the sector as a whole.

The project has the potential to divert approximately 422 tonnes of plastic waste from entering the landfill. This diversion is expected to help eliminate around 1,266 tonnes of CO2 emissions annually. The project's plans are also to install 20 filtration systems and provide waste bins and storage facilities. The project's potential to reduce the need for imported bricks and pellets aligns with the goal of reducing plastic waste.





Active participation and collaboration by stakeholders are crucial for implementation of the Project activities. This will help develop a more sustainable environment for present and future.



## The project conducts Training of Trainers on household-level plastic waste management

BES with GIN conducted a Training of Trainers Program on 'Household-level Plastic Waste Management' on 4th and 5th May.

The key feature of the 2-day workshop also included awareness on the impacts of plastic pollution on our rivers and the importance of conserving our rivers. The workshop included a visit to Memelakha and Clean Bhutan's Waste Academy at Changjiji as part of its activities. The principles of circular economy was a staple fixture of the workshop as representatives from various institutions gathered, discussed, deliberated and highlighted the importance of plastic waste identification, segregation, and recycling. The workshop, a two-dayer intrinsically commanded a vibe that emphasized promoting sustainable practices and fostering innovative solutions.

The implementation of the Project will be overseen by the South Asia Cooperative Environment Programme (SCAEP), with support from the United Nations Office for Project Services. The initiative is made possible through the Plastic Free Rivers and Seas for South Asia grant, a project worth USD 1.04 million funded by the World Bank. The project is scheduled to conclude in January 2025.

**Lead Implementing Organization**  
Bhutan Ecological Society (BES)

### Meet our Partners



**GIN:** The Gross International Nature (GIN) is a young Environmental Conservation organization established by youth from all parts of the world. It aims to provide Transboundary solutions for the environment and the socio-economic sector. GIN seeks to promote traditional/indigenous knowledge; and believes in a bottom-up approach, which prioritizes Community-based organizations that encourages collaboration between local communities, Government, NGOs, and CSIs.



**Clean Bhutan:** It was founded by a group of passionate individuals committed to preserving Bhutan's pristine natural environment and promoting sustainable living practices.

Through various initiatives such as community clean-up campaigns, waste segregation programs, and educational outreach activities, Clean Bhutan strives to empower local communities to take proactive steps towards environmental conservation. The organization collaborates closely with government agencies,



businesses, and other stakeholders to advocate for policy changes that support sustainable development and environmental protection.



**Thimphu Thromde:** The Thimphu Thromde office is the administrative body of the capital city, Thimphu. It is established to oversee the urban development and management of

Thimphu Thromde. The municipality office supervises the capital city's urban planning and infrastructure development, waste management and community services.



**River clean-up campaigns will be a markedly visible activity for the project that will involve participation by youth and women. Clean-up campaign and advocacy for education and information are still viewed as the more effective methods to address the malaise of waste in its many forms.**



**Kawang Gewog Administration, Thimphu Dzongkhag:** Kawang is one of the gewogs (block) of Thimphu Dzongkhag (district). The Kawang

Gewog Administration plays a pivotal role in local governance. It oversees the implementation of government policies and programs at the grassroots level, ensuring efficient delivery of services to residents. Helmed by a Gewog Tshogde (village council), it addresses community needs, fosters development initiatives, and maintains law and order.



**World Bank:** With 189 member countries, staff from more than 170 countries, and offices in over 130 locations, the World Bank Group is a global partnership: five institutions working for sustainable solutions that reduce poverty and build shared prosperity in developing countries. The World Bank Group works in every major area of development. It provides a wide array of financial products and technical assistance, and helps countries share and apply innovative knowledge and solutions to the challenges they face.

inter-governmental organization, established in 1982 by the governments of South Asia to promote and support protection, management and enhancement of the environment in the region.



**UNOPS:** The United Nations Office for Project Services

(UNOPS) was established in 1973 as part of the UNDP. It became an independent, self-financing organization in 1995. UNOPS concentrates its support in the areas of infrastructure, procurement, project management, human resources and financial management services. UNOPS often works in post-disaster and peace and security settings, developing countries and economies in transition.



**SACEP:** The South Asia Co-operative Environment Programme (SACEP) is an



### 1. BES organizes co-creation workshop

Date: 30-Mar-24

Towards Zero Waste: Capturing moments of collaboration at our co-creation workshop today, where we engaged with leading organizations and stakeholders passionate about waste management advocacy. Together, we delved into best practices and innovative strategies to craft an advocacy training package for our target communities, ensuring it's effective, context-sensitive, and inclusive.

Participants from UNDP Bhutan, Gross International Nature, Eco Nation, UNOPS, Clean Bhutan, Bhutan Association of Women Entrepreneurs, Thimphu Thromde, Global Shapers Thimphu Hub, Team Earthling, Revive Bhutan, RENEW, and high school teachers shared invaluable insights.



### 2. Baseline survey: 883 households in Kawang gewog and Thimphu City was conducted to -

- ✓ Understand consumption habits that lead to plastic waste generation.
- ✓ Understand waste generation and waste segregation behavior among the various subsets, with an emphasis on women and youth.
- ✓ Understand current knowledge levels of target groups on waste segregation



### 3. Household Plastic Waste Management Toolkit



The Household-Level Plastic Waste

Management (HPWM) Advocacy Toolkit, is a thorough guide for advocates focused on educating communities and institutions about efficient plastic waste management practices at home.

### 4. Installation of filtration system:



Before



After



Before



After



Urbanization is different from development. In that development is supposed to mean progress and therefore – ‘Progressive.’ While the capital city Thimphu is emblematic of the country’s developmental progress in many ways.; it is unfortunately also the poster child for all the ills and backlashes that urbanization has accumulated over the years. We are tagged ‘one of the fastest urbanizing countries in South Asia.’ It’s not talking about our finest hour. It’s a read-between-the-lines message and a veiled ominous call that says harken the sage voice at the back of our collective minds and heed this message, tread with caution, meticulously weigh the risk and rewards or see it all turn into a wasteland, if not for you in your time, then slowly and painfully for your progeny and their times.

## What we’re up against

Nationwide, households generate over 80 tonnes of solid waste per day, of which more than 50% is generated in urban areas. The quantity of waste generated has been on the climb directly proportional to and reflective of the changing consumption patterns of the Bhutanesese society and increased economic activities. It has increased from packaged food and beverages, single use plastics and other commercial packaging materials, e-waste, food waste, construction waste, waste-water and other materials. Add to that illegal dumping of waste, and littering is one of the major challenges.

By 2024, Thimphu is projected to generate 68.6 tonnes of waste in general every day. The capital city generates plastic waste in thousands of tonnes yearly, as can be deduced from aforementioned stats. At present, close to 30 tonnes of plastic waste is generated nationwide on a daily basis. Stats collected for 2021, recorded the daily average of the waste disposed at 54 metric tonnes. The amount of waste disposed of at the landfill In Thimphu, increased by approximately 4,800 metric tonnes in 2021 compared to 2019. In 2019, about 14,824.8 metric tonnes of waste was disposed. Weighbridges specific to measuring waste is not in use currently so daily waste data is collected via estimation of the number of trips to the landfill, volume of waste compactor and density of waste type.

## Right impact, Right time

The project aims to amend traditional approaches for solid plastic remediation in the Wangchhu watershed through collaborative partnerships, novel interventions, and more evolved policies on waste management. In doing so, stakeholders (Government, NGOs, local communities, private sector) will collaboratively develop recycling hubs that allow sustainable alternatives to emerge (plastic bricks as a component of the ‘circular plastic economy’). The project encourages public engagement via outreach education (social media) by emphasizing Bhutan’s national commitment to natural resource conservation (one of the Four Pillars of Gross National Happiness). Gender inclusivity is a key component that will be promoted throughout by amplifying more contemporary solutions that will broaden and extend the traditions of a previous generation. The project goes on further and charts a route for the managed plastic waste to end up at potent recycling agents both within and outside the country.



“In the journey ahead, it's not just about 'you' and 'I,' but about 'we' and 'us,' coming together in unity and shared experiences. Together, we will combat plastic waste and work towards creating a greener and better Bhutan.



Students  
DECHENCHOLING HIGHER  
SECONDARY SCHOOL

“The program on Household Level Plastic Waste Management highlighted how small changes collectively make a big impact. It emphasized the critical role individuals play in combating plastic pollution. Feeling inspired and motivated post-program, I'm eager to implement what I've learned, knowing every effort contributes to a cleaner, healthier planet.



Kinzang Choden  
TEACHER / TABA LOWER  
SECONDARY SCHOOL

Waste as a social malaise shows no sign of letting up. Over the years it has become worse. Tried and tested methods to fight it are still tried and tested, only to have the issue trying and testing the patience of those left fighting and fighting against it. Nonetheless, a continuously raging battle is the only way to contain it. The Project with a strategically thought-out plan of action is very likely to make a dent.

Following are five outcomes as projected. These outcomes are expected to lead to reduced river pollution, improved waste management practices, enhanced livelihoods, and increased gender equality in administrative roles.

**Outcome 1 – Engender riverscape conservation and plastic waste management within targeted communities:** It includes increased awareness and engagement, empowerment of local communities, and active involvement of women and youth. In that, Bhutan's national commitment to conservation will be amplified and extended via outreach education and social media. Local communities will be promoted and reinforced in their efforts to effectively manage plastic waste at the household level. Women and youth will be actively solicited to organize (and participate in) local plastic waste management groups.

**Outcome 2 – Implement contemporary innovations that reduce riverscape pollution and environmental degradation:** In this prevailing scenario, drainage infrastructure will be upgraded to prevent the direct entry of plastic waste into Wangchhu. This is seen being done through strategic waste storage facilities, recycling hubs, and upgraded drainage infrastructure.

To promote effective waste collection and management, waste storage facilities will be strategically installed, and three types of bins (HDPE, PP, PET) will be distributed in targeted areas. A recycling hub will be established to process collected waste into reusable plastic PET pellets and bricks – Useful Recycled Bricks or UR Bricks.

**Outcome 3 – Achieve a marked reduction in plastic pollution levels by initiating/extending partnerships and collaborations:** Drawing a bigger and inclusive circle it will rope in multiple stakeholders, including local governments, NGOs, and educational institutions. Pacts for stakeholder collaborations such as MOUs or Memoranda of Understanding will be (re)established with stakeholders, including local governments, NGOs, private entities, and educational institutions.

The Project will also foster and strengthen the South Asia Co-operative Environment Programme Regional Alliances (SACEP: Nepal, Bangladesh, India, Sri Lanka) to ensure Trans-Himalaya riverscape monitoring.

**Outcome 4 – Expand the waste management expertise in Bhutan:** This will be achieved through



the development and dissemination of knowledge resources, capacity-building initiatives, and the creation of economic opportunities. Visualize that happening on and through the lines of Policy briefs, technical reports, podcasts, infographics, and Standard Operating Procedure (SOPs) made available on open access platforms.

The expanded waste management expertise will be employed in support of government initiatives to reduce plastic pollution and improve solid waste management.

**Outcome 5 – Promote women in project administration and management:** This includes the development of female administrators and managers, economic opportunities for women and vulnerable groups, and capacity-building initiatives for women in waste management systems.

The Female administrators and managers will be developed as part of a new cadre affiliated with plastic waste management and conservation. Economic opportunities will also be created for women, youth, and vulnerable groups. Capacity-building initiatives will be implemented to train women in the operation and maintenance of plastic waste management systems.

The long-term impacts will include reduced river pollution, improved waste management practices, enhanced livelihoods, and increased gender equality in administrative roles. Active participation and collaboration by stakeholders is crucial for the implementation of these activities and to develop a

more sustainable environment to be developed for the present and the future.

The project aims to involve over 1,500 beneficiaries, with a commitment to ensuring that at least 50 percent of participants come from marginalised sectors of society, including youth and women from different areas. The perimeter of its focus is on eight specific communities: Taba, Jungshina, Royal Body Guard, Dechencholing HSS, Kawang Gewog, Kuzugchen MSS, Tango, and Dordena Buddhist College and Pangrizampa.



The 13th Five Year Plan prioritizes meeting the long-term goal of reducing waste going to the landfill and recover waste promoting recycling value-chain. Promotion of a circular economy wherein development of integrated waste management estates is in focus. These estates will engage the private sector to recover waste materials, promote recycling businesses, initiate waste to energy projects and initiate other measures.



**UNEA**

United Nations Environment Assembly  
of the United Nations Environment Programme

The United Nations Environment Assembly that concluded in the first week of March 2024 agreed to develop a legally binding treaty by 2024 to end plastic pollution. The treaty is expected to present a legally binding instrument, reflecting alternatives to address the lifecycle of plastics, the design of reusable and recyclable products and materials, and the need for enhanced international collaboration to facilitate access to technology, capacity building and scientific and technical cooperation.

**References:** *BES; National Waste Inventory Survey 2019; National Waste Management strategy 2019; Bhutan Second NDC; Population Projections Bhutan 2017-2047; Kuenselonline*



# Success story of the Nationwide Accelerated Dog Population Management and Rabies Control Program (NADPM and RCP)



**Bhutan is the first country to sterilize 100% of its free-roaming dog population.**



## Objectives:

- Achieve 100 percent free-roaming dog sterilization and eventual freedom from free-roaming dogs.
- Ensure responsible pet ownership through digital identification and registration of all pet dogs.
- Manage feral dog population.
- Control rabies through intensified vaccination campaigns and achieve the global goal of “0 by 30” – zero human death due to dog-mediated rabies by 2030.
- Conserve native Chang-khyi breed.



**The key accomplishments include:**

- **Sterilization of 61,680 dogs (91.2% unowned and 8.8% owned).**
- **Microchipping and registration of 32,544 pet dogs.**
- **Anti-rabies vaccination of 61,331 dogs (91.1% unowned and 8.9% owned).**
- **Amendment of Livestock Rules and Regulations, 2022.**
- **Construction of the Changkhyi Conservation Centre (CCC) for native breed conservation.**



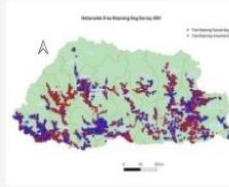


# NADPM & RCP Implementation Timeline

## PLANNING AND PREPARATIONS

August 2021 - March 2022

- Develop NADPM & RCP Blueprint
- Develop training modules
- Procurement of medicines, equipment, consumables
- Stakeholder consultations
- Public awareness



## NATIONWIDE FREE ROAMING DOG SURVEY

29 - 30 December, 2021

- Total FRDs counted - **72,621**
- Owned FRDs - **26,921**
- Unowned FRDs - **45,670**
- Total FRDs targeted for sterilization - **44,393 (16,169 Owned and 28,224 Unowned)**

## NATIONWIDE CAMPAIGN PHASE I

29 March - 11 April 2022

- Thimphu, Paro, Haa, Gasa, Trongsa, Bumthang, Monggar, Lhuentse, Tsirang, Trashigang and Trashiyantse.
- One clinic team each in the remaining 9 dzongkhags
- **Total dogs sterilized - 15641**



## ON-THE-JOB TRAININGS

2 Sept. 2021 - 27 Mar. 2022

Total HR trained:

- General Desuups - 1050
- CNR Desuups - 17
- Livestock Desuups - 44
- Foresters from DoFPS - 18
- Livestock officials - 321

**Total dogs sterilized - 7860**

## NATIONWIDE CAMPAIGN PHASE II

18 April - 1 May 2022

- Chhukha, Samtse, Dagana, Punakha, Wanduephodrang, Zhemgang, Sarpang, Pemagatshel and Samdrujongkhar.
- **Total dogs sterilized - 18924**



## MOPPING PHASE I

21 May - 4 June 2022

- Chhukha, Samtse, Dagana, Punakha, Wanduephodrang, Zhemgang, Sarpang, Pemagatshel and Samdrujongkhar.
- **Total dogs sterilized - 3812**

## MOPPING PHASE II

7 - 21 June 2022

- Thimphu, Paro, Haa, Gasa, Trongsa, Bumthang, Monggar, Lhuentse, Tsirang, Trashigang and Trashiyantse.
- **Total dogs sterilized - 3553**



## COMBING PHASE

15 July 2022 - 18 June 2023

- In all 20 dzongkhags
- Mainly elusive dogs
- Lactating and puppies not fit for surgery during earlier phases
- Use of dartguns and traps
- **Total dogs sterilized - 11,890**

## INDEPENDENT SURVEY

24 Nov. 2022 - 9 Oct. 2023

- Total Desuups deployed - 865
- Trashiyantse was first dzongkhag to achieve 100% sterilization on 25.12.2022.
- Samdrujongkhar was last dzongkhag to achieve 100% sterilization on 9.10.2023.



## CLOSING CEREMONY

27 October 2023 - Thimphu  
30 October 2023 - Trashigang  
- Bumthang  
- Phuntsholing

- Awarding of Certificates of recognition to Dzongkhags, Thromdes and key stakeholders.
- Signing of Exit Plan (Handing over the program sustenance to Dzongkhags and Thromdes)



**TRASHIYANGTSE**

Date of self-declaration :  
24 November, 2022  
Date of Independent Survey :  
16 - 25 December, 2022

1

25 DECEMBER  
2022

27 DECEMBER  
2022

**HAA**

Date of self-declaration :  
25 November, 2022  
Date of Independent Survey :  
16 - 26 December, 2022

2

**LHUENTSE**

Date of self-declaration :  
13 January, 2023  
Date of Independent Survey :  
20 - 30 January, 2023

3

31 JANUARY  
2023

10 FEBRUARY  
2023

**TSIRANG**

Date of self-declaration :  
7 January, 2023  
Date of Independent Survey :  
17 - 31 January, 2023

4

**TRONGSA**

Date of self-declaration :  
16 January, 2023  
Date of Independent Survey :  
2 - 20 February, 2023

5

20 FEBRUARY  
2023

4 APRIL  
2023

**ZHEMGANG**

Date of self-declaration :  
9 February, 2023  
Date of Independent Survey :  
8 March - 1 April, 2023

6

**PUNAKHA**

Date of self-declaration :  
23 January, 2023  
Date of Independent Survey :  
7 - 27 March, 2023

7

6 APRIL  
2023

16 MAY  
2023

**PEMAGATSHEL**

Date of self-declaration :  
9 March, 2023  
Date of Independent Survey :  
1 - 10 May, 2023

8

**GELEPHU THROMDE**

Date of self-declaration :  
30 March, 2023  
Date of Independent Survey :  
1 - 10 May, 2023

9

16 MAY  
2023

22 MAY  
2023

**SARPANG**

Date of self-declaration :  
10 March, 2023  
Date of Independent Survey :  
20 March - 18 April, 2023

10

**TRASHIGANG**

Date of self-declaration :  
24 February, 2023  
Date of Independent Survey :  
1 - 27 April, 2023

11

23 MAY  
2023

27 MAY  
2023

**PHUNTSHOLING THROMDE**

Date of self-declaration :  
7 March, 2023  
Date of Independent Survey :  
22 - 25 May, 2023

12

**BUMTHANG**

Date of self-declaration :  
28 April, 2023  
Date of Independent Survey :  
22 - 28 May, 2023

13

2 JUNE  
2023

5 JUNE  
2023

**THIMPHU THROMDE**

Date of self-declaration :  
17 May, 2023  
Date of Independent Survey :  
27 May - 3 June, 2023

14

**THIMPHU**

Date of self-declaration :  
22 May, 2023  
Date of Independent Survey :  
27 May - 3 June, 2023

15

5 JUNE  
2023

22 JUNE  
2023

**PARO**

Date of self-declaration :  
29 May, 2023  
Date of Independent Survey :  
9 - 21 June, 2023

16

**WANGDUEPHODRANG**

Date of self-declaration :  
30 May, 2023  
Date of Independent Survey :  
9 - 24 June, 2023

17

6 JULY  
2023

6 JULY  
2023

**MONGGAR**

Date of self-declaration :  
7 June, 2023  
Date of Independent Survey :  
19 June - 5 July, 2023

18

**CHHUKHA**

Date of self-declaration :  
7 February, 2023  
Date of Independent Survey :  
17 February - 29 May, 2023

19

15 JULY  
2023

21 JULY  
2023

**GASA**

Date of self-declaration :  
27 March, 2023  
Date of Independent Survey :  
25 April - 12 May, 2023

20

**DAGANA**

Date of self-declaration :  
5 June, 2023  
Date of Independent Survey :  
25 June - 4 July, 2023

21

26 JULY  
2023

1 AUGUST  
2023

**SAMTSE**

Date of self-declaration :  
14 June, 2023  
Date of Independent Survey :  
10 - 20 July, 2023

22

**SAMDRUPJONGKHAR THROMDE**

Date of self-declaration :  
5 June, 2023  
Date of Independent Survey :  
14 - 23 July, 2023

23

9 OCTOBER  
2023

9 OCTOBER  
2023

**SAMDRUPJONGKHAR**

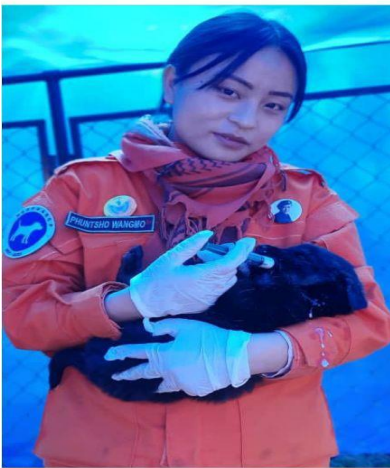
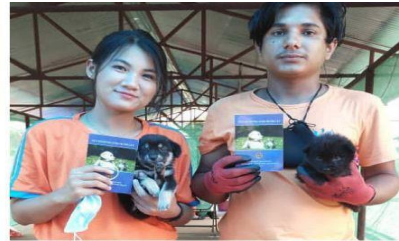
Date of self-declaration :  
18 June, 2023  
Date of Independent Survey :  
14 - 23 July, 2023

24





# Homeless, not worthless **ADOPT A**





## Responsible Pet Ownership

- Microchip and register your pet
- Follow vaccination schedule
- Pet identification with collar and tags
- Spay and Neuter your dog



**NAKULU  
DOG SHELTER**



# TashiCell –in touch, in sync, with the times

TashiCell is the first operator to commercially launch 5G in Bhutan – Its **5G services are now** present at all dzongkhag Headquarters and satellite towns.

TashiCell achieved nationwide 4G coverage in all 20 Dzongkhags Headquarters in December 2018. Prior to that its 4G services were launched in western parts of Bhutan during early 2016.

TashiCell became the first telecom operator in Bhutan with nationwide 3G coverage by June 2015

TashiCell achieved nationwide mobile coverage with 2G in August 2012.

TashiCell – it’s up with the times, it’s up-to-date. It resonates with the times. TashiCell is power in your hands. TashiCell puts convenience in the palm of your hands as you connect and communicate with the world around you.

## eTeeru

eTeeru is, mobile money or e-money, a mobile payments system based on accounts held by a mobile operator and accessible from subscribers' mobile phones. It was launched on 6 April, 2020.



*Your traditional wallet, but with more convenience... & style:*

No need to cramp your wallet with wrinkled, doggy-eared cash money anymore. eTeeru stores money for you to make

payments. Go cashless as you use eTeeru for your day-to-day expenditure.

With eTeeru you can make **Utility bill payments** such as electricity bills; payments to Department of Revenue and Customs (DRC); RICBL; Water-bills (Thimphu Thromde). Some of the recent updates are--Any NQRC payments; -BT number recharge; Cashin-RMA Payment gateway (PG)



*No need for a bank account, Send & Receive money:*

Send and receive money without a need to have a bank account. Get eTeeru. Download the latest version of eTeeru app (available on

both Apple Store & Play Store) Open the app and Click Register. Enter your registered TashiCell number and Continue. Enter OTP & Personal Details to Create Account. You can also use BT Number to register with eTeeru.



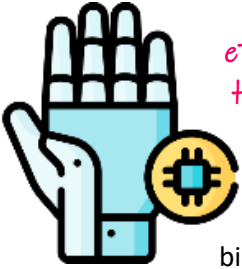
*No second thoughts, eTeeru takes care of your safety:*

eTeeru keeps your savings bank account concealed, hence it’s safe from third party system and hacking.

Know that, using phone numbers doesn’t risk exposure of bank account numbers. And rest assured, because

Anti-theft and Anti-money laundering (AML) are generally compliance requirements by all FIs under RMA.

Use an account for your monthly expense and transfer that equivalent amount into your eTeeru wallet. Use it for daily transactions – shopping, fuelling, paying utility bills, etc. Do not share your savings account details with anyone.



*eTeeru is the future of payment;  
Hold the future in your hands:*

With 98% of millennials managing their money using their phones it's estimated that there are 1.6 billion Registered Mobile money accounts (13% year on year growth) as of 2022 (GSMA Report). Be part of the future; Switch to eTeeru.

# Safe, Secure and Reliable

Your safest digital wallet for your convenience.

## Tashi InfoComm Private Limited

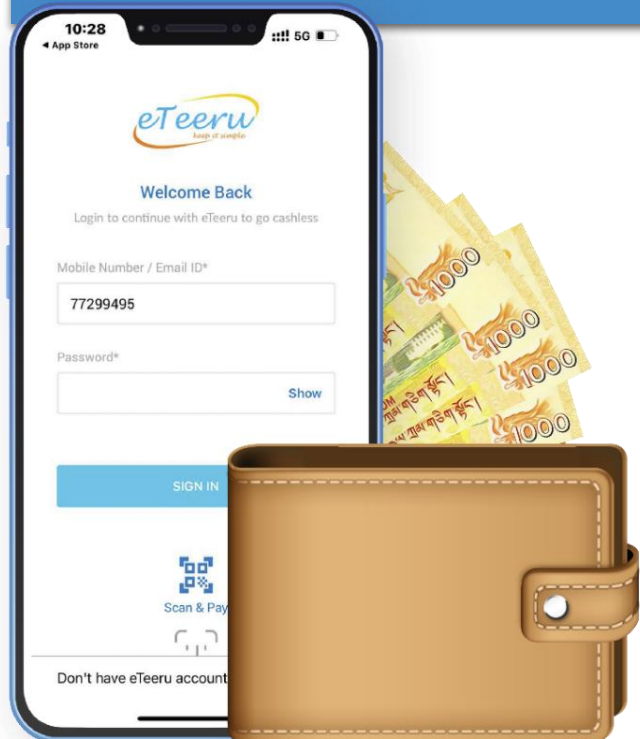
### TashiCell Brief

Tashi InfoComm Private Limited is the second cellular company in Bhutan, a separate entity under Tashi Group of Companies. The company was incorporated on January 23, 2007, under the Companies Act of Bhutan 2016, after it won an international bid to operate as the second cellular operator in Bhutan.

### A TashiCell Milestone

Bhutan marked a significant moment in its technological evolution with the historic launch of the National Digital Identity (NDI) app in October, 2023. What sets this launch apart is the remarkable integration of the NDI system with third-party organizations, specifically TashiCell.

The collaboration between NDI and TashiCell makes TashiCell one of the very first 3rd party organizations to have successfully integrated with NDI. This achievement paves the way for enhanced services and a more streamlined experience for customers.



*eTeeru*, the next generation of wallets  
Keep it simple



www.tashicell.com 24/7 Support ☎ 7700

T&C Apply\*



# Climate change jargons. A quick guide to common terms



In major UN climate conferences, you’ve probably been seeing a lot of jargon tossed around — terms like “mitigation”, “carbon neutral” and “sustainable development”. And this language can be overwhelming and confusing.

Because climate reports are often written at a scientific level, it would be helpful to clarify some of the vocabulary. **Here’s a guide that can help you keep up with the news about climate change.**



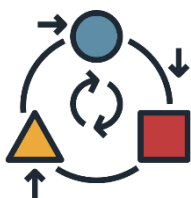
## 1. Mitigation

**Official IPCC definition:** Mitigation (of climate change): a human intervention to reduce emissions or enhance the sinks of greenhouse gases.

**Translation:** Stopping climate change from getting worse.

When people talk about “mitigation” they often focus on fossil fuels — coal, oil and natural gas — used to make electricity and run cars, buses and planes. Fossil fuels produce greenhouse gases, including carbon dioxide. When these gases are released, they linger in the atmosphere. They then trap heat and warm the planet.

Some ways to mitigate climate change include using solar and wind power instead of coal-fired power plants; making buildings, appliances and vehicles more energy efficient so they use less electricity and fuel; and designing cities so people have to drive less. Protecting forests and planting trees also help because trees absorb greenhouse gases from the atmosphere and lock them away.



## 2. Adaptation

**Official IPCC definition:** In human systems, the process of adjustment to actual or expected climate and its effects, in order to

moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects.

**Translation:** Making changes to live with the impacts of climate change.

Climate change is already happening. Heat waves, wildfires and floods are getting worse. People will have to find ways to live with these threats. For example, some world cities are planting trees to help people stay cooler and some Coastal cities may need sea walls to protect against floods. More “adaptation” actions will be needed as climate change gets worse.

Bhutan's first National Adaptation Plan (NAP) analyzes climate risks in seven climate vulnerable sectors of water, agriculture and livestock, forests and biodiversity, human settlement and climate-smart cities, health, energy, climate service and disaster risk reduction. Based on the assessments, it identifies medium-and-long-term adaptation priorities—a much-needed shift from ad hoc, project-based adaptation interventions focused on addressing short-term threats toward more strategic and programmatic approaches to adaptation.

## 3. CO2 removal



**Official IPCC definition:** Carbon dioxide removal methods refer to processes that remove CO2 from the atmosphere by either increasing biological sinks of CO2 or using chemical processes to directly bind CO2. CDR is classified as a special type of mitigation.

**Translation:** Taking carbon dioxide out of the air.

The amount of carbon dioxide in the air has been increasing for many years. In 2019, there was 50

percent more of it than in the late 1700s. Planting trees and restoring grasslands can remove carbon dioxide from the air. There are also carbon dioxide removal technologies that store it underground or in concrete, but these are new and not widely used.

#### 4. Carbon neutral



**Official IPCC definition:** Carbon neutrality is achieved when CO<sub>2</sub> emissions created by human activity are balanced globally by anthropogenic carbon dioxide removals over a specified period. Carbon neutrality is also referred to as net-zero carbon dioxide emission.

**Translation:** Adding no net CO<sub>2</sub> into the air. But this does not mean you can't add any CO<sub>2</sub>; it just means if you do add any into the air, you must take out the same amount.

The IPCC warns that the world needs to be carbon neutral by 2050 to avoid a serious climate crisis. This means using both “mitigation” to reduce the amount of CO<sub>2</sub> added to the air and “carbon dioxide removal” to take CO<sub>2</sub> out of the air.

#### 5. Tipping point



**Official IPCC definition:** A level of change in system properties beyond which a system reorganizes, often abruptly, and does not return to the initial state

even if the drivers of the change are abated. For the climate system, it refers to a critical threshold when global or regional climate changes from one stable state to another stable state.

**Translation:** When it is too late to stop effects of climate change.

One of the most talked-about tipping points involves the collapse of the West Antarctic ice sheet. Some research suggests this collapse may have already started happening. West Antarctica alone holds enough ice to raise sea levels worldwide by about 11 feet (3.3 meters), and if all glaciers and ice caps melt, sea levels will end up rising about 230 feet (70 meters).

Glaciers in Bhutan are receding at a rate of 30-60 meters per decade. The melting ice from these

receding glaciers is increasing the volume of water in glacial lakes, and the melting of ice-core dams is destabilizing them, pushing the hazard risk for Glacial Lake Outburst Floods (GLOFs) to critical levels.

#### 6. Unprecedented transition



**Official IPCC definition for “transition”:** The process of changing from one state or condition to another in a given period of time. Transition can be in individuals, firms, cities, regions and nations and can be based on incremental or transformative change.

**Translation:** Making big changes together to stop climate change — in a way that has not been seen before.

In 2015, countries around the world agreed to try to keep the planet from warming more than 1.5 degrees Celsius (2.7 F). Among the biggest sources of global warming are coal-fired power plants. Quickly shifting the world over to renewable energy, such as wind and solar power, would be an unprecedented transition. Without big changes, climate change could make the world unlivable.

#### 7. Sustainable development



**Official IPCC definition:** Development that meets the needs of the present without compromising the ability of future generations to meet their own needs and balances social, economic and environmental concerns.

**Translation:** Living in a way that is good for people alive today and for people in the future.

In 2015, 193 member states of the United Nations adopted a set of 17 interlinked “sustainable development goals”. Intended to be achieved by 2030, these goals are aimed at helping countries grow in ways that are healthy for people *and* the environment. Producing more carbon dioxide than the planet can manage is an example of development that is *not* sustainable and that’s causing climate change.

✠ *Courtesy: Lance Ignon, a former communications adviser for the IPCC and now senior associate dean for strategic initiatives and communication at USC Dornsife*





## Electrical Safety Tips



**DO NOT** tie wires to electric poles for drying clothes.



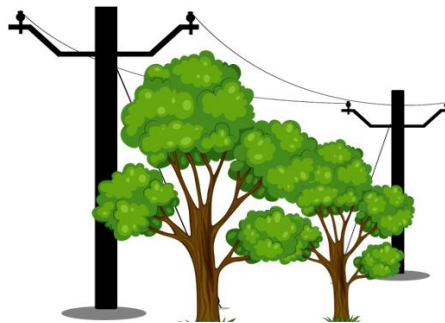
Avoid parking heavy vehicles and dumping muck/garbage near/under power lines.



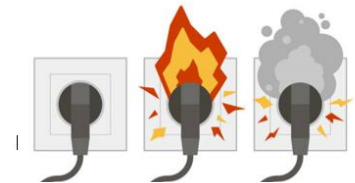
Make sure plugs fit securely into outlets. Don't force a plug into an outlet if it doesn't fit.



Be aware of power lines when doing routine outdoor tasks such as cleaning a pool, using a ladder, pruning trees, and installing or removing an antenna.



**DO NOT** plant trees near or under the electrical lines.



**DO NOT** overload outlet with too many electrical extensions.



If you excavate ground, make sure that there are no power cables in the ground, especially in town areas. You will need to obtain clearance from BPC for digging in towns.



**DO NOT** cut down trees near power lines.



**NEVER** put metal objects in live parts of appliances or outlets.



**DO NOT** erect prayer flags below or near any electrical lines.



Unplug appliances before cleaning.



Check and replace damaged electrical cords/sockets.

## DRUK GREEN POWER CORPORATION LIMITED

Druk Green Power Corporation Limited (DGPC), a subsidiary of Druk Holding and Investments Limited, is responsible for developing and managing all hydropower resources and other renewable energy in Bhutan.

To date, 2,453 MW has been developed comprising of six hydropower plants with a total installed capacity of 2,444 MW and 9 MW mini/micro hydropower and wind/solar plants. This represents a 10.3% achievement of the total 23,760 MW of techno-economically feasible potential. About 70% of the total energy generated is exported to India which constitutes at least 24% of direct revenues to the exchequer and offsets much of the balance of payments with India. The hydropower sector now contributes over 17% of the GDP.

To fulfil its mandate in accelerating hydropower development, DGPC has undertaken many studies and investigations of hydropower projects, commissioned a few diversion schemes to augment existing generation and has developed and is in various stages of constructing hydropower projects.

### HYDROPOWER DEVELOPMENT

DGPC developed the 126 MW Dagachhu hydropower project, and in many ways, was a huge achievement. It was the first public-private partnership project with multilateral financing, the first cross-border CDM project,

the first project executed entirely by a Bhutanese management team, and the first project with a market-based PPA for power offtake.

DGPC built on the strength of its experiences from the Dagachhu hydropower project to venture into the construction of the 118 MW Nikachhu project. To supplement the power demand, especially during the lean winter months, DGPC is developing small hydropower projects through its subsidiary Druk Hydro Energy Limited (DHyE). The construction of three projects with 104 MW total installed capacity in Phase I began in 2022 and will be commissioned by 2024-2025. DHyE is also developing four projects in Phase II with 195 MW total installed capacity, of which the construction of two projects has begun. Five more hydropower projects will be developed in Phase III. Simultaneously, the update of the DPR for some large hydropower projects such as the 1,125 MW Dorjilung project, 180 MW Bunakha project, and 404 MW Nyera Amari I & II is being carried out. The construction of Kholongchhu Hydro Energy Limited will be reinitiated in 2024.

### DEVELOPMENT IN OTHER RENEWABLES

To supplement the winter energy deficits, the feasibility studies of solar projects have been initiated. with a target to implement 1,000 MW solar photovoltaics projects by 2030. 500 MW solar photovoltaic projects are expected to be commissioned by 2026 and the balance 500 MW by 2030.





Dratshangs,  
Shaydras and  
Lhakhangs

Inside Private  
Vehicles

Commercial  
Centres

Fine Nu.10,000  
per incident  
of failing to  
display 'No  
Smoking' signs  
by person-in-  
charge

Fine Nu.500  
per incident  
of smoking in  
'No Smoking'  
areas

Fine Nu.1000  
payable by  
person-in-  
charge (per  
person smoking  
in no-smoking  
area of the  
premise)

NO  
SMOKING  
AREAS

Public Spaces

Recreation  
Centres

Public  
Transportation

Public  
Gatherings

Institutions



### How Do Drugs Impact the Teenage Brain

- Planning
- Judgement
- Trouble performing easy tasks
- slowed thinking and reaction time
- Memory loss or impairment
- Lower IQ

### Common Parts of the Brain Impacted

- Neurotransmitters
- Dopamine and serotonin production
- Prefrontal cortex

### Long Term Effects & Consequences

- Dangerous behaviors
- Difficulty in school
- Addiction and dependency
- Co-occurring mental health disorders

## TEENS ARE AT RISK!

- Teens who use cannabis regularly have, on average, **one grade point lower** than their peers.
- Kids who begin drinking before age 15 are **4x more likely** to become addicted than people who start at age 21.
- Teens who use cannabis may **lose up to 8 IQ points** between childhood and adulthood.

