POLICY BRIEF

PROMOTING THE CIRCULAR ECONOMY AND WASTE RECYCLING IN BHUTAN'S AGRICULTURE, LIVESTOCK, AND FORESTRY SECTORS – OPPORTUNITIES FOR LIVELIHOODS, RESOURCE USE EFFICIENCY, AND IMPROVED ENVIRONMENTAL MANAGEMENT

THE CIRCULARITY LADDER		
Smarter creation and use of products	R0 Refuse	Turning a product redundant by cancelling its function, or by substituting it with a radically different product
	R1 Rethink	Intensifying product use (e.g., via product sharing or multifunctional products)
	R2 Reduce	More efficient use and/or manufacture of products through the use of fewer natural resources and materials
Extending the lifespan of products and parts	R3 Reuse	Reuse of discarded yet still usable product, for the same purpose, by a different user
	R4 Repair	Repair and maintenance of broken or malfunctioning product, to enable continuation of its original function
	R5 Refurbish	Refurbishing and/or modernizing and older product, so that the improved version can be used in the product's original function
	R6 Remanufacture	Using parts of a discarded product in a new product of the same function
	R7 Repurpose	Using discarded products or their parts in new products with a different function
Useful application of materials	R8 Recycle	Processing of materials to achieve the original high-quality or reduce to low-quality
	R9 Recover	Incineration of materials, recovering their energy

EU Technical Assistance Complementary Support Project – Bhutan

Funded by the European Union

DAI
Shaping a more livable world.

POLICY MESSAGE IN CONTEXT

CIRCULAR ECONOMY CONTEXT

This Policy Brief is based on an assessment carried out in 2021 titled *"Strategy and Action Plan for Creating a Recycling Economy in the RNR Sector of Bhutan by 2040,"* which generated a study Report approved in March 2022.

That Report provides an extensive series of Concept Papers as Annexes that focus on specific recycling models for Agriculture, Livestock, and Forestry.

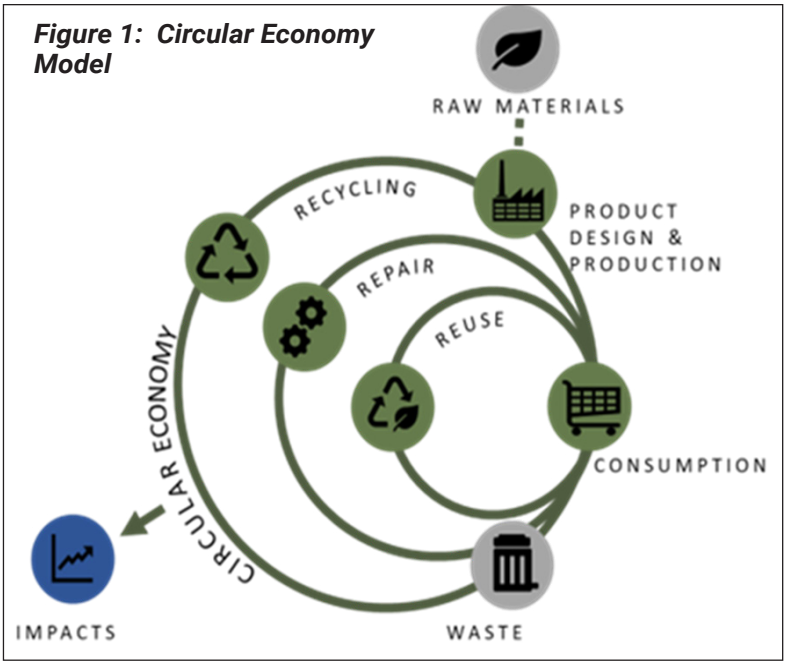
This Policy Brief includes a series of key policy messages for decision-makers within and outside the Ministry of Agriculture and Forests (MoAF); discusses the drivers for change that can foster recycling systems in all three RNR sectors; and sets out some of the main policy implications, including strategies, institutional processes, and guidelines.

Key inputs for the study were consultations carried out in 10 Dzongkhags with officials and business leaders, such as District Agriculture Officers, Livestock Officers, Forest Officers, and officers in the various Gewogs. Consultations were also conducted with the relevant businesses to capture information from the existing business establishments connected with the RNR sector. The study covered more than 200 business establishments in various sectors, and over 200 officials working for crucial agencies who work in the Renewable Natural Resources (RNR) sectors at national and District levels.

The Report points out the growing problems caused by Bhutan's production, consumption, and disposal strategy, where raw materials are made into products – a process which involves the generation of waste – also once these fabricated items are consumed, then disposed of at the end of their life, there occurs additional waste. This pattern contributes to increasing pressure on ecosystems, as well as reducing the availability of numerous ecosystem products and services, such as clean water and air, stable crop yields, fertile soil, energy for cooking and heating, and the habitats needed by a wide range of animal and plant species.

The Circular Economy describes an innovative socio-economic system that is based on numerous business models which replace the typical 'end-of-life' approach, by instead applying a wide variety of policies and practices that reduce, reuse, recycle, and recover the materials that are involved in a variety of production, distribution, and consumption processes.

Figure 1: Circular Economy Model



The justification for conducting this study is to provide support to Bhutan and the RGoB as it strengthens its national efforts to apply the concept

of the Circular Economy, where waste is managed to conserve environmental quality while maintaining economic prosperity and building social equity. The study's goal is to support entrepreneurs in Bhutan to better apply Circular Economy principles in agriculture, livestock-rearing, and forestry, and to take advantage of opportunities for "green" business development. The study had three expected results:

(1) *Assessment of current and potential waste/by-products from RNR and their contributions to the agriculture, livestock, forestry, and rural infrastructure sectors;*

(2) *Assessment of the projected potential contribution of renewable and recyclable resources to the GDP of Bhutan for the period up to 2040, given that this is the lifetime of the Vision 2040 Strategy;*

(3) *To produce a "Strategy and Action Plan for Creation of a Circular/Recycling Economy in Bhutan" to prepare concrete concepts, model designs, physical implementation schedules, and financing plans.*

Equally crucial to sustainable development alongside the Circular Economy, is to increase the self-sufficiency of Bhutan in food production, by encouraging farmers, other land-users, and businesses across the country to adopt new technologies and practices that improve the management of local natural resources, while reducing the impacts of climate change. The long-term sustainability of the proposed solutions depends on how effective they are in building the resilience of households and communities, while ensuring the direct participation of women and the younger generation in local eco-development processes.

The study finds that the concept of "the circular economy" has largely been an unknown concept within Bhutan, and is only recently emerging in discussions about Bhutan's development pathway. This unfamiliarity also extends to those in the agriculture, livestock, and forestry sectors. In Bhutan, almost 69% of the population depends on agriculture and livestock, and as many as 80% of the poorer households are engaged in agriculture.

Natural resources tend to be used linearly. Instead of being recycled and reused as raw materials for a secondary production process, their residues become waste. The extent of recycling and reuse varies significantly with the type of waste. In Bhutan, the bioconversion rate of organic waste streams is still low, even though around 57% of household waste in urban areas is organic.

In rural areas, a much more significant percentage of all waste is derived from organic pathways and sources, attaining almost 100% in some villages. Farming households in Bhutan are generally efficient in recycling their organic waste. For example, animal manure from stall-fed livestock farming for milk production may be used to produce biogas on-farm for lighting, cooking, and heating. The residues of the biogas production process are eventually used for farmyard manure. On-farm biogas production has expanded significantly in the past five years, from a 2015 baseline of around 1800 biogas units to more than 6800 in 2020. These values are likely to increase, given that the RGoB has established biogas production as a key policy priority.

Forestry plays a crucial role in farming systems, through the vital products and services that woodlands and trees make to Bhutanese livelihoods. Bhutanese farmers depend extensively on forest resources for cattle grazing; leaf litter collection for either animal bedding or soil amendment; medicinal plants; and other non-timber forest products. In addition, 95% of the rural population rely on their local forests for timber, fence posts, and fuel wood, and cut branches/leaves as cattle fodder. As a result, a variable degree of community and household-level usage and recycling of numerous types of forest resources takes place throughout Bhutan.

KEY POLICY MESSAGES

In the conclusions of the Report, the main Policy Message is that the circular economy should be elevated to become an integral feature of Bhutan's Green Recovery after the threats from Covid-19 diminish. The circular economy in the agriculture, livestock, and forestry sectors, plus improved waste management and climate-smart technologies, can strengthen entrepreneurship and lead directly to substantially enhanced livelihoods and environmental management. Investing in the circular economy, increasing energy efficiency, and addressing the expected impacts of climate change should become mechanisms for transitioning away from a conventional linear production model.

The RGoB should announce a significant shift towards maximizing opportunities for the circular economy, which would align strongly with the interests of the European Union, the EU Green Deal, and EU Member States development agencies regarding their programming support to Bhutan. The elevation of the circular economy to a national priority would be welcomed by agencies such as the Asian Development Bank and the numerous green and climate-financing initiatives that are expanding their financing for Circular Economy initiatives.

RGoB stakeholders will enhance external investment and create new jobs throughout the supply chains of the products that feature in the practices of a circular economy. Transitioning to the circular economy by supplying information to the public and practical guidance to entrepreneurs, adopting incentives, and rapidly executing any needed regulatory reforms, are all issues to be addressed. Some of the critical imperatives for taking the circular economy forward are as follows:

(1) **Integrate circular economy strategies and principles into all RNR policies, regulations, and guidelines of Ministries;** or generate separate policies, regulations, and guidelines that support the implementation of potential projects.

(2) **Review all proposed circular economy models, green waste and climate-smart technologies, and the further piloting and dissemination of various high-priority circular economy models and technologies in the RNR sector that are viable in the Bhutanese market.** Conduct further consultations and update the recommendations and draft Action Plan set out in EU-TACS Report Volume 1 of EU-TAC A2.7.

(3) **Deliver capacity-building at all technical levels, starting with awareness-raising of RNR officials; farmers and ordinary householders; Dzongkhag and Gewog officials; NGOs, commercial bodies, financial entities, and entrepreneurs.** Generate promotional materials under the overall goal of providing specific training, in Modular Format that build the technical expertise for a wide array of circular economy intervention designs and implementation processes.

(4) **Establishment by MoAF and MoEA (amongst other Ministries) of linkages between researchers, experts, and financial and industrial entities,** and support coordination among various players within the RNR sector towards the adoption of circular economy policies and technologies.

KEY CONCERNS AND BARRIERS

The term" circular economy" describes an economic system based on business models that replace the "end-of-life" concept with reducing and/or reusing, recycling, and recovering the materials used in the processes involved in the production, distribution, and consumption. A key aim of circular economies is to avoid the creation of brown zones, where a landscape or area is left in an ecologically-damaged situation. A **circular economy operates at various levels,** with activities occurring between:

(1) Operations at the micro-level, involving products, companies, and consumers;
(2) Operators at the meso-level, such as eco-industrial parks and industrial zones;
(3) Macro-level entities such as one or several cities, regions, and neighboring countries.

It is important to note that imports and exports may be occurring between agencies and businesses at all of the three levels listed, including waste products from the locations of origin that are gathered as inputs for one or several waste-processing industries and are then sold on as finished products to private consumers, or else to wholesalers and then to retailers.

Conceptually, the **circular economy is an integral element of sustainable development.** Circular economies must be deliberately created through various policies and economic incentives in all waste-producing sectors. Waste management processes need to be designed to conserve environmental quality, maintain economic prosperity, ensure that the process is adaptable, remains sustainable, and build social equity.

A critical relevant example of international practice, is Gandaki Urja Ltd, based in Pokhara, Nepal. This company operates a 45 TPD compressed biogas bottling plant. The plant uses a multiple-feed continuously stirred tank reactor digester to produce biogas from cow and buffalo dung, pig manure, poultry litter, and vegetable and agricultural wastes.

The biogas is purified to form Bio-CNG, compressed and filled into suitable cylinders, and sold as a substitute for LPG. The plant produces enriched organic fertilizer, which is another valuable product that is crucial for supporting the sustainability of local farming.

Figure 2: Facilities of Gandaki Urja Ltd., a biogas bottling company in Pokhara, Nepal

The conversion of industries worldwide to circular economies focuses on providing various benefits to current and future generations. It has been the focus of many European Commission programs, such as the Switch-To-Green initiatives in major developing-economy regions, including the Switch-Asia initiative that the Commission has managed since 2007. These European Commission programs are organized under the "Sustainable Consumption and Production" (SCP) tagline. They are implemented through highly relevant components to any individual country interested in SCP, such as Bhutan.

The study Report identified barriers to technology research, piloting, and out-scaling, including policy and institutional issues; technical and value chain barriers; capacity and informational constraints; and the lack of available finance and investment. The main barriers and factors to consider include:

Figure 3: Core Barriers to be tackled in Developing the Circular Economy Approach

1. **Policy Barriers:** Bhutan has no specific policy for addressing the RNR circular economy other than the general waste management policy formulated by the National Environment Commission. Often, the existing policies of different agencies are not aligned.

2. **Technical Barriers:** Numerous technologies are available in the international market for carrying out recycling activities within the RNR sector that have not yet been introduced in Bhutan. Even when these technologies enter the Bhutanese market, there remains an urgent need for capacity-building.

3. **Institutional Barriers:** Multiple agencies at the central and local levels play different roles in RNR waste management. Each of these organizations has other functions and responsibilities. Without proper coordination, gaps between the current competencies and the competencies required for operating new equipment and systems will hamper the implementation of a circular economy.

4. **Financial Barriers:** Inadequate financial support is highlighted as one of the critical barriers to establishing a national waste recycling management system. The capital requirement for waste technologies is considerably higher than conventional technologies, and such investment offers few payback opportunities. Government subsidies are seen as crucial.

5. **Capacity Barriers:** Most waste management businesses are usually operated by Gewog authorities, NGOs, or lower- or mid-level staff. They cannot carry out proper RNR waste recycling activities with their current skills. The level of formal education attained is lacking among many individuals working in the RNR agriculture sector. Some participants have only had informal education. It will be difficult to convince those without any educational background to accept new technologies and take advantage of the revenue opportunities offered by processing RNR waste. As a result, capacity-building will be essential.

6. **Informational Barriers:** Gaining trust from private entrepreneurs requires demonstrating some successful circular economy projects to convince them of their sustainability and their income generation potential stability. Private entrepreneurs who are engaged in waste collection are struggling with sustainability. One method to motivate the businesses is to conduct pilot projects based on public-private partnerships and then showcase them as an established PPP model of plant operation.

7. **Wide-scale cooperation** among relevant organizations, including the private sector, is required for carrying out strategic waste recycling or circular economy activities. But so far, the volume and efficacy of these linkages are a long way from being sufficient.

DRIVERS OF THE CIRCULAR ECONOMY

The **main drivers for change** that facilitate and promote the research and outreach connected with climate-smart and green business technologies include the following:

1. **Overcoming Policy Barriers:** The contractual terms for the private-sector entities involved in Public-Private waste management partnerships are not conducive to private sector investment, and there is inconsistency in the tax exemptions. All the conflicts between laws, regulations, policies, and other instruments must be carefully reviewed to check what type of conflict occurs across different policy instruments. Solutions must be proposed, even if this requires new legislation or updates to regulations.

2. **Technical Barriers:** Capacity-building is needed to increase the expertise of the engineers, operators, O&M staff, managers, and decision-makers involved in the enterprises implementing the technologies. For example, an essential item of equipment for organic waste management is a robust plastic container that can be latched and resist the attempts by wildlife and stray dogs to open the containers. Potential models need to be identified from across the HKH region. In Bhutan, trials must be conducted to see which types of organic-waste receptacles are strong enough not to break open when animals attempt to gain entry. Additionally, some of these technologies will take a while to be accepted by the Government and public, and awareness-raising campaigns may be needed.

3. **Institutional barriers** must be overcome via wide-scale cooperation among relevant organizations, including the private sector, which is required for carrying out strategic waste recycling or circular economy activities. The volume and efficacy of these linkages are a long way from being sufficient. Even within agencies, there is a lack of clear terms of reference and delegation of responsibilities needed to ensure the proper planning, implementation, and monitoring of waste recycling. **Coordination between collectors, traders, governmental and non-governmental organizations, exporters, and institutional buyers continues to be weak. It requires the intervention of efficient institutions supported by adequate policy and legal instruments.** Besides these constraints, there is a lack of proper enforcement rules and regulations. There is a need for additional procedures, strategies, processes, and guidelines to support circular economy businesses and enable them to operate. However, only a few pilots have been undertaken; NGOs and international donors have backed these.

4. **Building capacities:** At central, Dzongkhag, and Gewog levels, even the mid-management officials responsible for the agriculture, forestry, and livestock sectors lack capacity. There is, therefore, a need for **capacity-building programs to increase the capabilities of Government officials, private entrepreneurs, waste collectors, and individuals in establishing circular economy approaches concerning RNR products.**

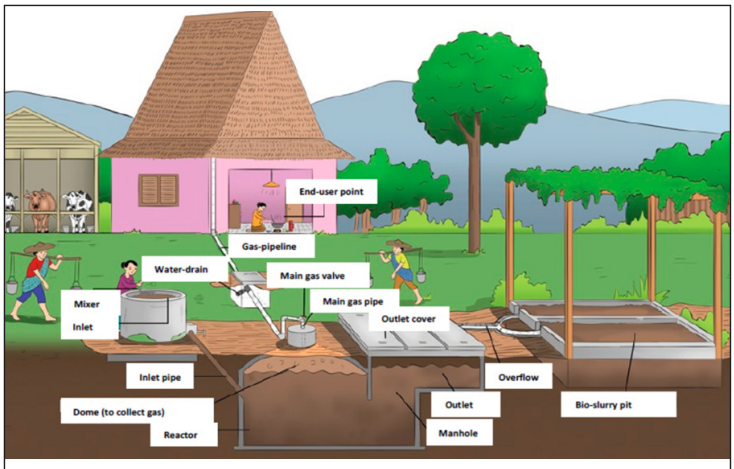


Figure 4: Biogas plant layout and operation

Youth unemployment is a growing concern, and solutions need to be found on a short timescale. Recycling models that allow young people to take on leadership roles as

youth entrepreneurs and take account of the preferences and expectations of young people should be prioritized and supported with technical and financial assistance from the RGoB. **Young people can be employed in the larger-scale circular economy or agro-processing manufacturing plants** once they become established. As their capabilities increase, the quality of their final products will improve, and demand may grow, offering opportunities to export these products to other countries.

5. **Public Support:** Concerning the information barrier, the public mostly lacks awareness and understanding regarding sound RNR waste management practices, such as the segregation of organic, recyclable, and non-recyclable waste. For example, with **urban food and other waste, there is a need to change their mindset toward segregating organic waste from inorganic waste to enable recycling plants to acquire reliable volumes of input materials that are not contaminated by organic residues, in sufficient volumes to allow them to conduct daily operations.** Households will need frequent education campaigns until they acquire new habits, such as segregating organic waste and locating it in a spot where garbage collectors can easily access the containers. This is essential for streamlining waste collection processes to be effective across large areas of terrain.

6. **Raw Materials Barriers:** Receiving a constant supply of raw materials on time and in the correct quantity is always a problem for waste collectors or recycling plants. Since organic matter and recyclable waste are produced at numerous widespread point sources, a perennial concern is the availability of adequate volumes of raw RNR waste and the need to travel considerable distances to load vehicles. All start-up businesses connected with waste management should probably be small-scale to match the raw waste materials supply chain. Medium- and large-scale companies will only be viable when reliable sources of waste are available.

7. **Example area: Municipal Waste Management** Significant progress has been made in the municipal regulatory and legal frameworks for urban waste collection. These systems have begun to involve the private sector in waste collection and recycling. However, there are still **challenges involving urban dwellers' segregation of waste into bio-degradable and non-degradable types. Achieving this shift in practices is essential for taking advantage of waste management opportunities such as biogas production and compost production.** Mainly in urban areas, organic wastes are sent directly to landfill sites. **This is a significant waste of resources, adds to GHG emissions, and should be considered a significant problem. Organic waste is a significant problem.** When it is left mixed in with other types of waste, it ruins all further scope for operations that could recycle the plastics and metals that would otherwise be extracted from that waste. Even when blended with other types of waste such as plastics and paper, the organic waste **decomposes and attracts rodents and insects.** So unsegregated waste becomes a deteriorating mess, creates risky working conditions for the staff of recycling businesses, and dramatically increases operating costs for the waste management companies.

Segregation of organic and non-organic waste.

As a matter of **urgency and high priority,** urban households must be targeted by awareness-raising via an impactful advertising campaign. This would **aim to make inappropriate waste disposal psychologically and socially taboo.** Designs that are appropriate for Bhutan need to be trialed, such as oil drum collectors and plastic receptacles of different sizes, that are solidly fixed on wheels and can be pushed from one location to another. The **receptacles that are 100% dedicated to organic waste should be identified with a specific color, efficiently handled and easy to notice.** These, as well as receptacles for recyclable waste, should be installed and emptied at regular intervals. If justified by high volumes of household waste, **households should be**

provided with durable plastic containers. The local authority should specify collection days for each urban zone, to advise households when the municipality collects organic waste.

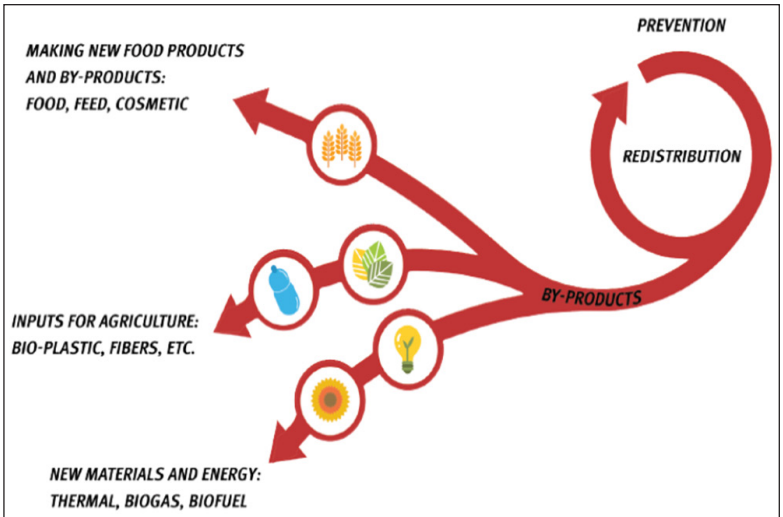


Figure 5: Recapturing value from food waste[1]

These **facilities and receptacles need to be managed by RGoB, MoAF, or Dzongkhags, and should be strategically located where householders, workers and consumers can easily access them.** Trust between local households and municipal leaders needs to be kept high, and commitments regarding waste management collection days should be adhered to by the waste collection firms. **Public awareness campaigns are essential for turning waste segregation into a family affair and a norm or expected practice of community behavior.** This will be reinforced by providing organic waste bins and receptacles that make it easy for the public to identify what kinds of trash should be deposited into each type of receptacle. A dedicated research study to examine the following questions would be helpful.

8. **Government ministries should be proactive in engaging with those financial institutions that are willing to invest in RNR circular economy or recycling projects,** if the projects are feasible. There are already several agencies providing funds for such initiatives. Among the banks, CSI Bank and Bhutan Development Bank (BDB) provide credit for RNR-related projects, as do organizations and funding vehicles such as DHI (through DHI Bizhub), the Government's Credit Guarantee Scheme (CGS), RMA, RENEW Microfinance, Bhutan Care Credit, Tarayana Microfinance, BAOWE Microfinance, Loden Foundation, etc.

9. The study reviewed the agriculture, livestock, and forestry sectors to identify their key value chains, the types of waste produced, and the volumes and current usage of waste products. **Using a Multi-Criteria Analysis approach, eight to ten candidate technologies were then scored and prioritized for each RNR sector.** A few of the numerous potential solutions that the authors have identified include:

FIGURE 6: PROPOSED KEY RECYCLING MODELS FOR THE RNR SECTOR	
RNR SECTOR	**RECYCLING MODELS RANKED IN TERMS OF PRIORITY**
AGRICULTURE RECYCLING MODELS	1. **Biogas production or electricity from organic waste.** 2. Production of **vermicompost, bio-fertilizer or feed** from agricultural waste. 3. Production of **pickles from the peel of green vegetables or fruits.** 4. Production of biodegradable plates or cups, ply boards, tea chests, packing cases, and suitcases from **areca nut leaves.** 5. Three types of baked goods (bread, rusks, and biscuits/ cookies) can be produced by incorporating cabbage leaf powder into wheat dough.

[1] Ellen MacArthur Foundation concept, redesigned by UNIDO https://www.ellenmacarthurfoundation.org/explore/food-cities-the-circular-economy

	6. Kimchi production using cabbage, radish, onion, garlic, ginger, and red pepper. 7. Using Areca Nut Husk or fiber to produce hardboard, paper board, fabrics 8. Using **corn stover to produce biofuels** or emergency livestock feed. 9. **Briquettes or pellets produced from compressed rice husks or straw.** 10. Complete animal feed made from potato waste. 11. **Production of porous bricks that** incorporate mixed crop residues such as paddy straw, wheat straw, and sawdust.
FORESTRY RECYCLING MODELS	12. **Production of fuel-briquettes from wood waste.** 13. **Production of charcoal** from bamboo stands (harvested bamboo), scaffolding wastes from the building industry, and/or wood waste. 14. **Using wood waste to produce treated doors and windows** 15. Sawdust is used as filler for furniture-making and to make scrap wood for joinery. 16. Production of **cardboard from wood waste.** 17. Production of **firewood from wood chips.** 18. Production of **decorative domestic objects or** valuable household items. 19. Production of **manure and mulch from wood waste.** 20. Using **bamboo waste and wood waste** to produce **fiber for clothing from;** rope from tree bark. 21. Production of **pavement/flooring from wood waste** and bamboo waste. 22. Production of **energy or electricity from wood waste** combined with other waste, such as leaves
LIVESTOCK RECYCLING MODELS	23. Production of **biogas from animal waste like dung** 24. Production of **manure or bio-fertilizer from animal waste** 25. Using **dung to produce bricks, paper, and fiberboard** 26. Use of **feathers, animal skins, and furs** in the textile industry

10. The study assessed the social and economic business case for **three of the most promising priority technologies:** the **production and bottling of biogas;** the **production of organic compost,** mainly using vermiculture; and the **production of charcoal from bamboo and wood waste.**

11. Promotion of innovative finance and incentives. The **effective implementation of circular economy interventions depends on sufficient financial resources over successive time frames.** Funds may come from various sources, namely: public and private; domestic and international; aid provided bilaterally or from multilateral institutions; traditional and innovative sources. Discussions in numerous forums, such as COP26, multilateral banks, or forums led by UN bodies, indicate

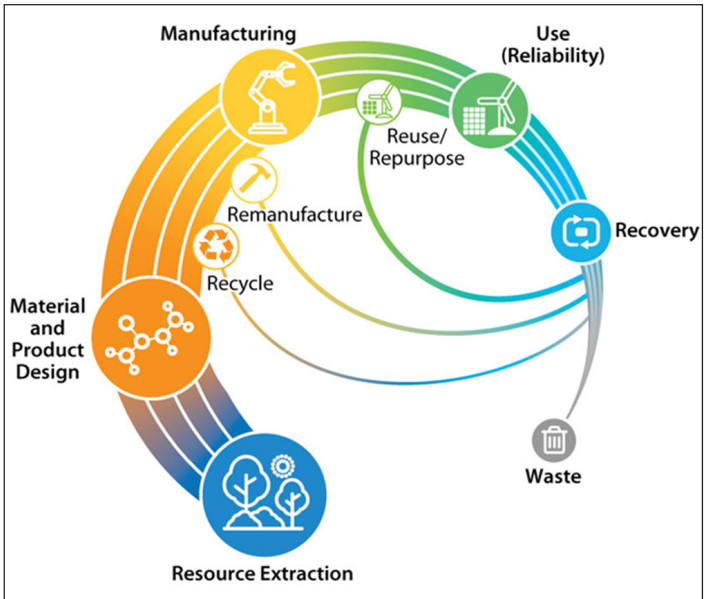


Figure 7. Depiction of the circular economy[2]

[2] https://www.nrel.gov/about/circular-economy.html

that an array of innovative financing options is emerging, such as Green Bonds, e-payments, and different climate-financing mechanisms and facilities.

12. For Bhutan, **addressing the complex processes and requirements connected with the available facilities** dedicated to funding Circular Economy projects, will be challenging. Many of the funds and existing aid mechanisms that have been set up often feature highly complex requirements for qualifying incoming proposals, and their approval processes are slow and demanding.

IMPLICATIONS FOR POLICY AND INSTITUTIONS

A problem analysis of issues relevant at the institutional level shows the following features:

In Bhutan, as yet, there are no formal strategic plans in place for promoting Circular Economy activities. The study Report proposes that, steered by a **RNR Waste Recycling Working Group,** the RGoB should adopt a **'Green Businesses, RNR Waste Recycling, Circular Economy and Climate-Smart Technologies Industrial Investment Plan'** to cover the Vision 2040 Strategy period. To ensure the transition towards a Circular Economy, the Report recommends developing a whole menu of holistic low-resource-usage recycling models.

The study sets out an **Action Plan** which proposes short-term steps to be taken, such as implementing a specific **Circular Economy Innovation Research and Adoption Agenda,** to be implemented within the framework of the Resilient Mountain Villages concept – that would increase the adoption of Circular Economy practices, aimed at significantly improving the livelihoods of Bhutan's population.

Part of the challenge will be to influence the private sector or the behavior of the public. One example might be establishing systems for waste segregation at the household level in the larger urban areas. These challenges can be overcome using awareness campaigns to alter household waste disposal methods, tax incentives, and the increased use of recycling equipment. Applying Circular Economy principles will raise awareness regarding its benefits among policymakers, entrepreneurs, and rural and urban households, thereby encouraging waste management as a critical lifelong priority.

Implementing the Report's overall strategies and plans will systematically mainstream Circular Economy principles and encourage dissemination of the most effective practices throughout the following two 5-Year Plans.

Research, piloting, and scaling-out of all the identified models across the three main RNR sectors would be led by the Royal Government of Bhutan and implemented by the **Ministry of Agriculture and Forests, the Department of Local Government, the Ministry of Economic Affairs, and other interested parties, especially development agencies.**

The policies and technical frameworks derived from this study and other EU-TACs studies and assessments should help provide a solid focus for investments that directly help develop the Circular Economy and waste recycling within Bhutan over the next 20 years.

The following **institutional implications have been identified for policy and for the lead agencies:**

POLICIES & LEGAL FRAMEWORKS

1. Bhutan's existing policies and regulations address the overall goal of improving waste management but as yet do not fix specific targets for establishing and disseminating particular RNR recycling and circular economy technologies and industries. As the circular economy is new in the Bhutanese market, few supportive provisions and enabling regulations exist. **There is a need to either integrate circular economy proposals and targets within existing policies, regulations, or rules; or else to come up with separate policy instruments.** As a result, there is a need to conduct a **series of consultations with stakeholders to discuss what regulations, plans, manuals, and guidelines are required** to implement circular economy programs effectively.

ORGANIZATIONAL STRUCTURES

2. The overall planning and management of circular economy policies and actions require the formation of a **new MoAF or inter-ministerial committee** whose members will take suitable decisions, monitor progress, and ensure the successful implementation of projects. This position is because the **various agencies or departments under MoAF have their respective functions and mandates, and it may not be feasible to add additional functions.** The current analysis indicates that to carry out circular economy functions, a separate committee and units or divisions are needed to coordinate, collaborate, support, and regulate circular economy activities or RNR waste recycling in the country.

VISIONS, MANDATES & ROLES

3. **Stakeholders such as MoAF, DoA, DoL and the DoFPS, and other lead stakeholders, should become specifically focused on their roles in developing a circular economy planning framework,** and, additionally, these stakeholders should disseminate the specific technologies that have been prioritized through all the analyses carried out in Bhutan from various sources, especially those listed in the RNR Circular Economy Vision 2040 Report (EU-TACS 2.12 study), alongside those listed in the Overall Report on the Opportunities for Green Businesses and Employment in the Waste Management Sector (EU-TACS A2.7 study, Part 1). The authors of both the mentioned studies recognize that MoAF stakeholders should continue reviewing and revising both the overall framework and the detailed activities required to implement this ambitious suite of strategies to ensure relevance, as circumstances change, going forward.

While there are more than ten strategies outlined in the A2.12 report, the **Assignment Team determined that this number is consistent with the fact that there are recommendations across the entirety of Bhutan's three main sectors of Agriculture, Livestock, and Forestry.** The implementation of each proposed strategy depends upon factors such as approvals and provision of budgets by MoAF, DoA, DoI, DoFPS, as well as the incorporation of the framework into the 13th Five Year Plan. Implementation of all strategies will not occur in one specific planning period, rather they will be distributed across institutions and across a range of timeframes.

STRATEGIES & PROGRAMMING

4. Based on the Study Team's sample assessment of existing practices in Bhutan (from pilots, demonstrations, and up-scaled activities) using a "Circular Economy Systems-Thinking Approach," and considering the findings from the field survey, stakeholder consultations, the draft of this Report (EU-TACS A2.12) contains a proposed Action Plan to support the development of a new Circular Economy strategic planning and implementation program for the RNR sector (forestry, livestock, and agriculture) in Bhutan. Emphasis was placed on the forestry sector since it is here where there are larger volumes of unused waste being generated. The MoAF Task Force requested this emphasis for the RNR Vision 2040 Strategic Plan by appointing the DoFPS as the technical focal point for the study. The following series of Strategies was developed:

STRATEGIC AREAS:

Strategy 1: *Strengthen the Policy and Regulatory Environment*
Strategy 2: *Governance and institutionalization of the organizational setting and procedures for fostering the Circular Economy*
Strategy 3: *Institute a separate division or section under MOAF for circular economy functions*
Strategy 4: *Conduct stakeholder consultations and awareness creation*
Strategy 5: *Establish institutional linkages and build arrangements to finance Circular Economic investments; pursue significant international partnerships to acquire substantial funds and support for RNR Waste Recycling programs.*
Strategy 6: *Incentives and support for RNR recycling or circular economy*
Strategy 7: *Skills development and technology access support*
Strategy 8: *RNR recycling or circular economy projects*
Strategy 9: *Investment in vermicomposting and recycling organic waste from farm crops (biomass waste), rural households (garden and food waste), and small businesses*
Strategy 10: *Provide follow-up and technical feasibility studies for charcoal production, especially in bamboo-producing southern areas.*
Strategy 11. *Introduce up-gradation and the bottling of biogas using the private sector*
Strategy 12: *Provide facilitation services*
Strategy 13: *Cooperation and coordination.*
Strategy 14: *Monitoring and evaluation*

5. A previous study carried out under the EU-TACS Project (EU-TACS Activity A2.7) was initiated at the request of the Department of Local Government (DLG) to promote green businesses to provide business opportunities for existing small and medium enterprises (SME) and employment for unemployed youth. This study identified a long list of potential green (waste management) and climate-smart technology service delivery businesses, which are to be used by the DLG in training programs to improve business and service delivery opportunity awareness at the Dzongkhag level (EU-TACS Activity A1.8). Findings from this Report have influenced and contributed to the action planning in the A2.12 document.

6. To avoid duplication and any potential contrasting or conflicting strategies, the content of the Action Plan that was contained in the previous drafts of this Report (EU-TACS Activity A2.12) has now been subjected to a correlation exercise together with Volume 1 of the *"Study on Business Development Opportunities for Green and Climate-Smart Technologies in Bhutan"* (A2.7). The consulting firm engaged in carrying out studies A2.7 and A2.12 was the same (Norlha), thus enabling a high level of correlation between the two studies and avoiding unnecessary duplication of work.

Overall, the DLG should focus on awareness and training for business and employment opportunities for Dzongkhags. In contrast, MoAF and its Departments should now become focused upon a National Strategy and Program to develop an RNR circular economy program.

PROCESSES, PROCEDURES & GUIDELINES

7. Affiliation and networking with relevant regional and international organizations and centers will support building local institutional and technical capacities in developing processes, procedures and guidelines for the RNR Circular Economies, which are lacking at the moment. The existing RNR concept in Bhutan needs to be 'further enriched' with circular economy principles, especially through links to financial, trade, existing industries, potential SME that are interested in becoming involved in waste management enterprise development.

HUMAN RESOURCES & TRAINING

8. The development of Government officials' capacity through in-service training is critical for the effective implementation and application of circular economy policy. **Several partnerships with international donors have enabled the RGoB to develop capabilities in specific environmental sectors.** Based on its progress in improving environmental management and investing in Bhutan's rural development, the RGoB is in a strong position for identifying existing or new partnerships that can direct resources to finance the proposed **'Green Businesses, RNR Waste Recycling, Circular Economy and Climate-Smart Technologies Industrial Investment Plan.'**

One key aspect, when seeking funding, is that the successful application by MoAF and other RGoB Ministries for international development assistance financing requires that **RNR sector officials should be highly-capable, skilled in negotiations, and able to identify shared priorities,** where requests for external TA to implement circular economy policies and practices can be made.

To meet the needs of numerous bureaucracies when submitting Technical and Financial Proposals, there is a key requirement **that MoAF and MoEA must develop a competent cadre of development finance specialists**. This grouping must be able to submit timely and sufficient proposals that match or respond to the numerous funding windows, facilities, and mechanisms that are now offering to fund green interventions in RNR sectors. Leading Bhutanese institutions such as MoAF, DLG and MoEA will need to be innovative and capable of rapid response to successfully apply for financing for the large volume of potential circular economy projects that may be planned.

The RGoB should **pursue active dialogues with its key most-significant international partners and engage in joint programming of technical assistance for Bhutan.**

Projects and programs should be designed both to provide substantial funding and to support capacity development programs that would enhance the implementation capacity of officials, entrepreneurs, businesses and individuals regarding the circular economy, climate-smart technologies, and green waste recycling.

Developing capacity at individual and institutional levels is essential for empowering citizens and officials to carry out particular activities to fulfill the circular economy implementation plans. Two important constituencies for capacity development are unemployed youth and the rural population. **Unemployed youth are amongst the most important recipients of Government support for commercial farming ventures, with land-user rights certificates being issued to them to create job opportunities in farming and agri-processing.** Ongoing capacity development is needed to ensure sustainable recycling or circular economy businesses are established in various renewable natural resource thematic subject areas.

MONITORING & EVALUATION

9. Monitoring and evaluation (M&E) are two concepts that differ but are strongly compatible. They can be broadly understood and expressed as the umbrella term "M&E." Monitoring is the continuous or periodic review and surveillance by a relevant agency to implement a program activity at every level of the hierarchy. M&E functions as a feedback system for problem-solving during project implementation.

Since circular economy modelling is a new development area in Bhutan, it will be important to track progress so that lessons are learnt through continuous monitoring and evaluation. The concerned departments of the RNR sector need to carry out the following:

- Adopt standard performance monitoring and evaluation procedures using performance monitoring matrices that present progress details, outreach, and impacts. **Indicators that track the progress of circular economy activities need to be included in logical frameworks or other project management tools such as Theories of Change (TOC).**
- The **responsibility to monitor and evaluate the progress of the circular economy following the annual plans lies with the respective departments** or during evaluations conducted by independent organizations.
- **The monitoring and evaluation tools** should include: (i) standard templates to check and monitor frequently (monthly or quarterly) the achievements against the plan; (ii) impact studies and analysis of problems; (iii) key performance indicators (KPI) to track how the CE intervention is supporting defined objectives and results; and (iv) annual progress reports.

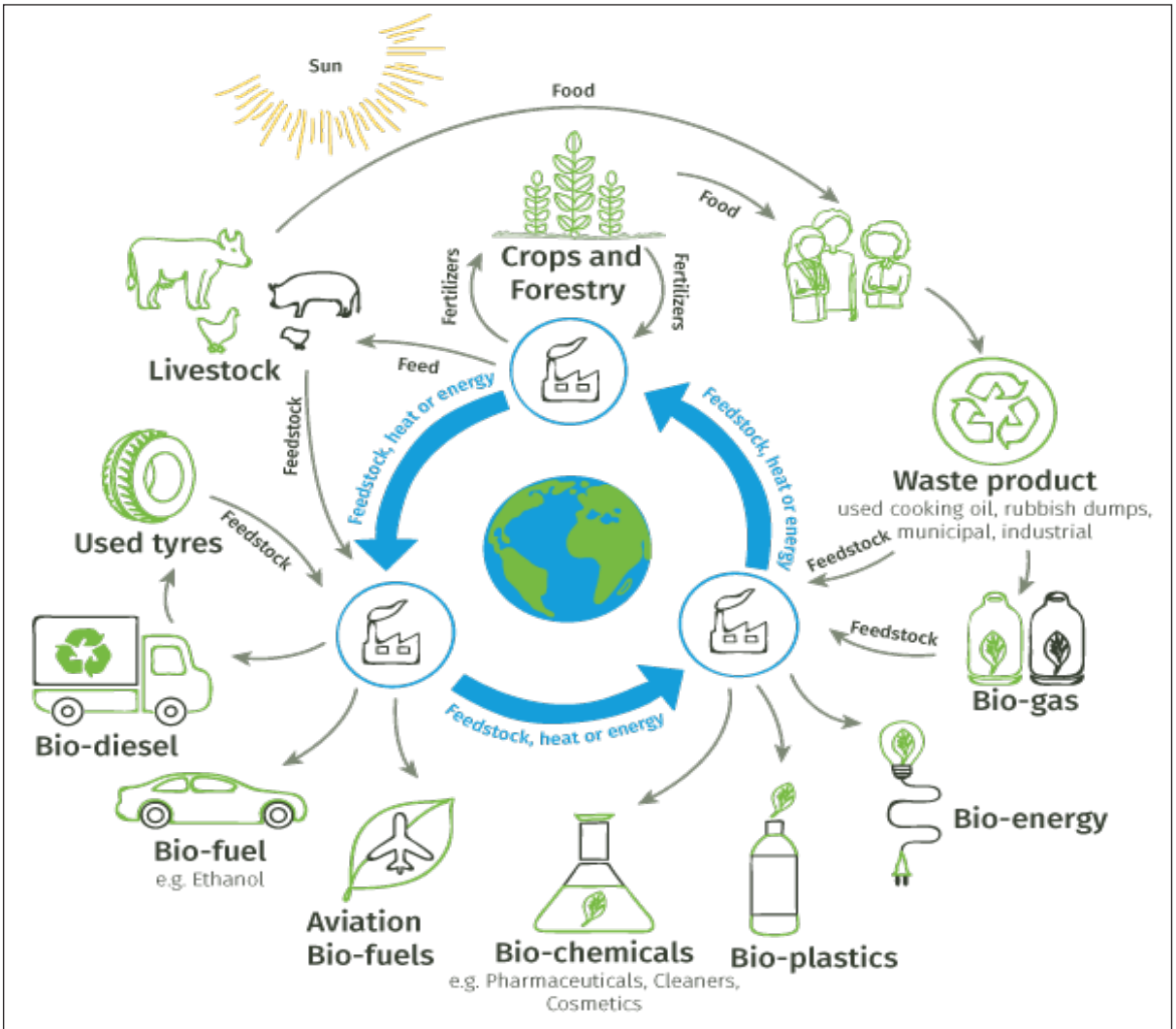


Figure 8: The circular economy model includes the RNR sector, the municipal waste sector, and several industrial sectors. Note that not all options apply to Bhutan[3].

[3] https://www.aurecongroup.com/thinking/thinking-papers/circular-economy-economic-development

Policy Briefs

Policy Briefs provide highlights on development issues in the renewable natural resources sector in Bhutan. The Policy Briefs provide information on topics such as governance, livelihoods, natural resources and sustainability in an accessible way for decision makers and donors.

Many of the Policy Briefs are based on evidence-based statistics available at the Ministry of Agriculture and Forests together with Research Studies carried out by the Policy and Planning Division at MoAF, and are often a synthesis of study reports prepared by international experts on behalf of donor agencies assisting the MoAF in Bhutan.

The **EU Technical Assistance Complementary Support Project** (EU-TACS) has the aim of contributing to the sound implementation of the EU-Bhutan bilateral development cooperation strategy. Since its inception in March 2019, the EU-TACS project has provided technical assistance focusing on rural development, climate change response, and local government plus fiscal decentralization. EU-TACS has also supported the implementation of two EU sector reform budget support contracts for the MoAF and the DLG. The assistance has included consulting services, studies and communication-related inputs, to provide stakeholders with direction for capacity-building, dialogue and policy change in key development themes and subject areas.

Policy Adviser:
David Billing, RNR Adviser, EU-TACS Project, Policy and Planning Division, MoAF, Thimphu, Bhutan

Policy and Planning Division:
Ministry of Agriculture and Forests
Thimphu, Bhutan
Phone No. 00975-2-323745/323746
E-mail: ppders@moaf.gov.bt
Website: www.moaf.gov.bt

Technical Advisers:
Yeshi Dorji,
Norlha Engineering,
Thimphu, Bhutan

Bjørn Bauer
Circular Economy Expert, Denmark

Text Development and Quality Assurance:
Mark Kowal, Natural Resources Management Consultant, DAI, Brussels

Key Stakeholders:
Department of Forest and Park Services, Department of Agriculture, Department of Livestock, Department of Agricultural Marketing and Cooperatives