



PERU

Eco-innovation in action

Case studies from around the world

In Peru, the Eco-innovation Project has brought about big changes for five SMEs who have chosen more ecological and innovative futures. At a national level, the Peruvian Ministry of Environment – with Grupo GEA as technical secretariat – have led policy initiatives such as a Policy Roadmap for Action, and the country has even created a multi-stakeholder Eco-innovation Committee with government entities, incubators and academia. Eco-innovation appears to have made an encouraging start in Peru.

The Eco-Innovation Project in Peru – delivering sustainability through policy:

- Creation of the 2016-2017 Policy Roadmap for Action; five strategies and 20 eco-innovation activities.
- Creation of an Eco-innovation Committee including government, incubators and academia, led by the Ministry of Environment (MINAM).
- Inclusion of eco-innovation in national policy instruments such as the National Eco-efficiency Strategy (ENE), Peruvian Technical Standard; and the Peruvian Cleaner Production Guide.
- Eco-innovation policy and methodology disseminated in municipalities and universities (Ventanilla, La Perla, Comas and Los Olivos municipalities; and the Pontifical Catholic University of Peru, San Ignacio de Loyola University and Scientific University of the South).
- Engagement with financing mechanisms like the Green Credit Trust Fund to foster eco-innovation in pilot projects.
- Proposal for an Eco-Innovation Observatory led by the Ministry of Environment.
- Creation of national eco-innovation website:
<http://www.eco-innovacionperu.com/>

Who are Peru's eco-innovating businesses?

- **IMSA**, manufacturers of machines and equipment for coffee, cocoa and grain processing, are notably introducing new technology to generate energy and biochar from the processing of organic waste. 'Pirotec' is a new pilot prototype which is expected to reduce energy consumption and waste, reduce operational costs and lead to overall improvements to the coffee and cocoa processing industries.
- **Peru Green Recycling** sustainably manage and recycle waste electrical and electronic equipment (WEEE); they are developing a new method for WEEE collection from communities. This will lead to higher revenues as expansion continues, with WEEE management activities being formalized in communities. The business is also raising awareness among citizens on the role of WEEE recycling.
- **FUNVESA**, a producer of iron castings for machinery in the mining and cement sectors, has adopted eco-innovation to boost its green credentials (taking advantage of new markets), and to create a new innovative material for the construction sector, made from the slags and sands from its production process. It has also reduced costs and energy consumption.
- **METAX** is a manufacturer of medical furniture products for healthcare establishments. Through eco-innovation, METAX is developing a new antibacterial product line and improving its performance by reducing operational costs, waste generation, and energy and water consumption.
- **MIMCO** provides metal coatings of steel structures for the mining, construction and telecommunication sectors. By developing new methods for re-use of zinc and recovery of iron by-products, the company anticipates income from recovered zinc as well as savings from reduced waste, lower operational costs and less use of raw materials.

COLOMBIA

Eco-innovation in action

Case studies from around the world

Five SMEs are paving the way for an eco-innovative future in Colombia, in partnership with the Ministry of Commerce, Industry and Tourism and the National Cleaner Production Centre. The success of businesses such as Zen Naturals, Zak Ecológico, Galco, Industrias Cavex and Naturesse means that Colombia has even created an eco-innovation policy roadmap for more action and more innovations.

The Eco-Innovation Project in Colombia – delivering sustainability through policy:

- Creation of the 2016-2019 Policy Roadmap for Action; eight strategies and 35 eco-innovation activities.
- Creation of an Eco-innovation Technical Support Group; an Eco-innovation National Roundtable has also been proposed.
- Linkages with ongoing sustainable consumption and production programmes from the Ministry of Environment.
- New national database with 50 strategic eco-innovation actors
- Training sessions for government officials, academics, financial entities and private sector figures.
- Engagement with financial sector (Bancoldex, Finagro, Innpulsa) and key government actors (Colciencias, National Department of Planning).
- Resources mobilized for eco-innovation in 10 municipalities in the Área Metropolitana del Valle de Aburrá.
- Three creative marathons at universities with participation from the private sector.
- Creation of a new eco-innovation website with training materials and financial opportunities.

Who are Colombia's eco-innovating businesses?

- **Zen Naturals SAS**, creators of body care products based on natural ingredients, are reducing agrochemical use and adopting new environmentally and socially responsible processes. The company is releasing new products and reducing energy and water consumption.
- **Zak Ecológico SAS**, producers of personal care and household products using aromatic and medicinal plants, are creating new business lines with goods from environmentally and socially responsible agriculture – and the company expects big sales increases while it participates in fair trade programmes. Its model is also based on 100% chemical-free formulae for its products.
- **Naturesse**, a cosmetics and amenities business, is innovating by recycling soap waste and reducing its environmental footprint – the company is developing a new product from its waste, and is lowering electricity and water consumption while attracting new customers.
- **Industrias Cavex SAS**, producers of greener industrial and household cleaning products, are putting new business practices in place – sales are rising, waste and energy consumption are down, and new business lines are being developed.
- **Galco SAS**, who galvanize metallic components for multiple sectors, have introduced new, greener industrial processes. Galco expects capacity to grow, but also significant reductions in waste and harmful chemical use.



EGYPT

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Case studies from around the world

In Egypt, the Eco-innovation Project attracted interest from five companies in the country's burgeoning chemicals sector, all co-ordinated by the Egypt National Cleaner Production Centre. Companies new and old turned to the potential of eco-innovation, identifying a series of hotspots in their value chains and setting new business models so they could target fresh markets with eco-friendly products and services.

Who are Egypt's eco-innovating businesses?



— **Perfecto Plast** is a Cairo-based producer of "master batches" for plastics manufacturing, with a vision of biodegradable plastic production which could transform the company's image and greatly reduce the amount of hazardous chemicals used in the industrial process. As part of a global shift to more sustainable materials, this young SME is eyeing a piece of the USD 3.4 billion global biodegradable plastics market (2020 projection), while making the workplace safer for employees.



— **Enkana**, a manufacturer of printing inks for the Egyptian and broader MENA market, is transitioning from solvent-based inks to eco-friendly water-based inks as part of its eco-innovative activities. The company is aiming to take advantage of a growing international market in water-based inks, while also reducing waste and exposure to harmful solvents for both workers and customers.



— **Al-Shehab Merdye** specializes in spinning and dyeing cotton yarns, offering a range of cotton dyeing services. Faced with high water and chemical consumption, high energy consumption due to older, inefficient machines, as well as the high cost of raw materials, the company has embarked on eco-innovation. The business now uses a new dyeing technique based on natural dyes, addressing the above hotspots while targeting a growing international market for environmentally friendly dyes.



— **ChimiArt**, who manufacture and import chemicals for a variety of industrial applications, used the eco-innovation approach to develop a sustainable business model based on a chemical leasing strategy (designed to tackle tough competition from other companies). The company is also targeting a reduction in onsite waste and big improvements to working conditions by enhancing safety and reducing onsite chemical accidents.



— **MCC**, or Metallurgical and Chemicals Company, provides chemicals for use in the Middle East construction and metallurgical sectors. By adopting a sustainable business model (using safer chemicals and focusing on new product lines, new marketing strategies and R&D) MCC is targeting a more eco-friendly, more successful future for the business.

MALAYSIA

Eco-innovation in action Case studies from around the world

Malaysia's economic growth is not limited to its conventional industry base – here, six SMEs across the country participated in the Eco-innovation Project with notable successes in job creation, new product lines and greener, more environmentally-friendly business strategies. Malaysia's eco-innovators are working in sectors such as haircare, printing, adhesives, fire safety equipment and Halal cosmetics.

In Focus:

SIRIM Berhad, a catalyst for Malaysian eco-innovation

Wholly-owned by Malaysia's Ministry of Finance, the industrial research and technology organization SIRIM Berhad has been at the forefront of efforts to help the country's eco-innovators get their projects off the ground with a range of support schemes.

Formerly the Scientific and Industrial Research Institute of Malaysia, SIRIM Berhad has been central to the upgrading of Wilron Products' facilities through funding from the SIRIM Industrial Innovation Fund, as well as providing a training and cooperation platform for the business.

The Fund also supported Accel's new ink dispensing technology, in addition to support in redefining its all-important business strategy. Fire Fighter Industry's eco-innovations were also funded by SIRIM, in addition to Intercosmetic's Halal skincare using seaweed extract. Equally, the organisation's research expertise has been channelled into Intercosmetic's eco-innovative product range.

SIRIM has even been on hand to assist Nets Printwork with feasibility studies on innovative printing materials for this ambitious company.

Who are Malaysia's eco-innovating businesses?

— **Accel Graphic System**, creators of an innovative, eco-friendly ink dispensing system, have tackled their business challenges head on through eco-innovation. The business has introduced a new product line, sustainable ink, allowing it to market an eco-label certified product. Accel now also provides two innovative services: "chemical leasing" and a new ink dispensing system, leading to environmental benefits and cost reductions. The ink dispensing service could also cut paint and packaging waste by 50%.

— **Wilron Products** is manufacturing an ecological, water-based adhesive, much different to the solvent-based chemical which made up the bulk of its production. The more environmentally-friendly adhesive will be eligible for the Green Building Index, leading to new business opportunities abroad. Innovations on the factory floor have also led to greater productivity with new automated technology.

— **T-Biomax**, an aspiring market leader in B2B haircare products, adopted a life cycle thinking approach (among others) to increase its competitiveness and aim for cost savings for clients of 5-10%.

— **Fire Fighter Industry**, a producer of B2B fire and safety equipment, is using eco-innovation to develop the local untapped residential market through new partnerships with property developers and Malaysia Fire Department. In this market, the company is aiming for a 10% year-on-year growth in sales revenue.

— **Nets Printwork**, an eco-printing service provider, is to develop by 2020 a printing paper from local, sustainably-sourced raw materials in collaboration with local researchers and providers.

— **Intercosmetic Asia Pacific**, cosmetics producer for several large firms, is developing Halal skincare products derived from locally available plant extracts, reducing product toxicity and waste.

SOUTH AFRICA

Eco-innovation in action Case studies from around the world

In South Africa, five ambitious companies used the Eco-innovation Project to develop new business models; all aimed at boosting profits, reducing environmental burdens and improving sustainability. South Africa's eco-innovators operate in the metals sector, but all five face very different challenges that are specific to their field. From kitchen fittings to steel moulds, electroplating to sheet metal and tanks for the wine industry, these manufacturers are now firmly invested in eco-innovation.

Who are South Africa's eco-innovating businesses?



— **MacBrothers**, a B2B manufacturer of stainless steel kitchen fittings, supplies catering equipment for a range of customers. The company aims to innovate through offering its bespoke kitchen designs based on eco-friendly principles – thus improving energy and water efficiency, and passing on financial savings to the client.



— **Fabrinox**, a manufacturer of sheet metal for its customers in food and beverage, agriculture, mining and water treatment, identified three "hotspots" to address during eco-innovation: the fuel and energy intensiveness of material acquisition; highly energy intensive manufacturing; and the end of life of products. As the company moves forward with eco-innovation, it is also adopting an "African strategy" to expand on the continent, and is building multiple industrial partnerships to gain footholds in new markets.



— **Mould Technico** is an SME which is targeting bigger use of recycled plastic products in new African markets and selling its steel moulds to companies in the plastics and packaging industries – especially those who are eyeing the biodegradable plastics segment. It is a business with its eye firmly on the green packaging market of the future.

— **GVTec** manufactures stainless steel casks for the wine industry – mostly to South Africa's Western Cape but also to international markets. For GVTec, eco-innovation means energy and water savings for customers, and boosting profits by 20% by providing services such as tank cleaning and repairs.

— **7Sea**, an electroplating firm from the Western Cape, has targeted innovations in both business and environmental terms: identifying new customer bases in the medical equipment, hospitality and arts and crafts sectors; as well as safer management of chemicals.

SRI LANKA

Eco-innovation in action

Case studies from around the world

In Sri-Lanka, the Eco-innovation Project was piloted by six businesses, all in the country's promising agri-food sector. Produce such as desiccated coconut, milk, vegetable protein and cinnamon are all part of Sri Lanka's diverse agri-food industry, but for these pioneering businesses driving eco-innovation, the economic successes are being matched by real progress for communities and the environment.

In Focus:

Eco-innovation in Sri Lanka – all about creating partnerships

A key pillar of the eco-innovation process, building partnerships has rarely featured so heavily as in Sri Lanka.

The Eco-innovation Project's participating businesses realised that many problems were linked to a lack of engagement with other partners in the value chain.

Now, with Sri Lanka's six eco-innovators committed to sustainability across the value chain, new collaborations have emerged:

Milk farmers are being educated and trained; R&D partnerships have been established with local universities and research institutes; local and international buyers are being engaged to boost sales; organic suppliers now supply greener produce; tourism agencies promote new eco-tourism destinations; technology providers enable more efficient processes; and government organizations provide connections and expertise on sustainable operations.

Who are Sri Lanka's eco-innovating businesses?

— **Asian Agro**, an SME from Kochchikade, used to produce desiccated coconut with high levels of waste and equally high energy bills. Through eco-innovation, the company now produces virgin coconut oil with higher profits and export potential, while minimizing wastes and also diversifying to new product lines.

— **Rasoda Dairies**, a dairy business previously hampered by lack of technology, low supplier productivity and high waste, has used eco-innovation to move from a production-centric business model to a partnership-oriented approach. With farmer development underpinning its eco-innovations, Rasoda has increased milk yields and energised its value chain, forming multiple supplier partnerships in the process.

— **Convenience Foods**, producers of vegetable protein and other foods, used the eco-innovation process to address a range of "hotspots". These include factory efficiency, high import dependency and government packaging regulations. Now the company is well on the way to locally-sourced soy, a new "green-conscious" product line, as well as strong partnerships with local farmers.

— **U10 Ceylon Commodities & Consultants**, who process and export cinnamon from Sri Lanka's Southern province, were faced with a range of problems before turning to eco-innovation – such as quality standards, waste, workforce issues and environmental damage. The company is now introducing multiple solutions including sustainable business practices, product diversification and eco-tourism to promote the brand.

— **Manchiee De Coco Products**, a new SME and coconut product specialist, has geared its eco-innovations towards the production of health-conscious goods which can be sold for premium prices on both local and especially international markets.

— **Jachufi Fruit-Based Industry**, a specialist in fruit processing, has used a range of tools including Life Cycle Thinking to develop a new business model. Now it produces fruit pulp to become a pulp supplier for bigger brands, with plans for distributing pulp and juice to its customers as part of a new, "service-oriented" model.



UGANDA

Eco-innovation in action

Case studies from around the world

Across Uganda, sustainable consumption and production practices have been given a real boost by the Eco-innovation Project, with the Uganda Cleaner Production Centre co-ordinating eco-innovation pilot projects for more than half a dozen diverse companies. Uganda's eco-innovators now specialise in agri-food sectors such as tea production, dairy products and rice, with encouraging results across the board.

Who are Uganda's eco-innovating businesses?

— **Upland Rice Millers Company (URMC)**, an SME which dries, mills and packages rice in collaboration with over 2,000 Ugandan rice farmers, embarked on eco-innovation to make the business perform more sustainably. Engaging with its value chain, the company set about tackling a range of hotspots including harmful on-farm fertilizers to water use, worker health and safety, and energy use. The company has already made big savings by switching from fossil fuels to biomass with energy efficiency on the increase. Profitability across the value chain has also risen due to yield increases for some farmers of 100% to 200%. Upland Rice Millers' sales are also expected to increase.

— **Igara Growers Tea Factory**, a tea processing business fully owned by farmers, has seen big changes since eco-innovation shook up the company's business model. With big plans for the domestic market, Igara Growers set out to reduce production costs while increasing output and the quality of its Greenleaf tea. Not only has market-based pay seen increases in farmers' earnings (by up to a third), but resource efficiency has improved markedly and 10 green jobs have been created. Tea yield is now expected to increase from 750kg per hectare per month to 1,200kg.

— **Reco Industries**, a food processing company specialising in fruit and vegetables, is marketing a new product line under the brand name RUTAFAs, using locally available raw materials. But the company's innovative focus on healthy foods is also bringing benefits to its industrial processes: improved energy efficiency through new steam-heating methods is saving the company both kilowatts and cash.

— **Buhweju Tea Factory** is a medium-sized tea production company fully owned by local farmers. To tackle problematic hotspots such as raw material wastage, high energy consumption, water pollution and soil erosion at supplier tea farms, the company turned to eco-innovation. It also aimed for increased output and better quality of its Greenleaf tea. With a new strategic business model and on-the-ground changes, Buhweju has already noticed that the quality of its Greenleaf has improved, resulting in increased Fair Trade sales (from 2% to 5%). The production of tea per cubic metre of fuel (firewood in this case) has also risen from 393kg to 472 kg.

— **GBK Dairy Products (GBK)** has used eco-innovation to tackle milk waste, water pollution and toxic chemical use at its dairy facility and at supplier farms. For this producer of UHT milk and flavoured yoghurt, key innovations included collaboration with small-scale farmers as key suppliers, and partnerships with DDA and TetraPack to process higher quality milk with a longer shelf life – having risen from 90 days to 180 days.

— **Kazire Health Products**, Uganda's leading producer of organic healthy drinks, took on eco-innovation to help it roll out its products across the country during a period of growth. One key innovation is the production of a new line of pineapple and orange peel drinks, essentially turning waste into profit. And a series of farm-level and factory-level changes have also led to big results. A plastic collection and recycling programme has created over USD 20,000 of additional revenue; and new



VIETNAM

Eco-innovation in action Case studies from around the world

The Eco-innovation Project in Vietnam was piloted by a diverse range of six SMEs within the agri-food sector. Targeting bigger market share and a more sustainable future, Vietnam's eco-innovators have had mixed short-term results. There have been notable successes for the country's tea and guava leaf tea producers – but the hard work continues for both coconut water and seafood processing specialists.

In Focus:

The challenges of putting eco-innovation into practice

The case of Vietnam shows that eco-innovation can have truly transformative potential.

In economic, social and environmental terms, the changes which companies such as Viet Lien or Hiep Thanh have gone through show that business success and sustainability go hand in hand. However, other Vietnamese innovators are being made to wait a little longer for measurable results.

A number of challenges still endure in Vietnam. Challenges such as stubbornly high domestic competition, the risk of intellectual property violations by competitors, complex regulations and administrative processes, cheap imports of raw materials or fertilizers which undercut demand for organic produce, and a lack of viable financing options to put new business models into practice.

For companies such as Lenger Seafoods Vietnam, the new eco-innovative business model also required approval from a European mother company.

However, for many of Vietnam's pilot SMEs, the lack of access to commercial loans in particular remains a big hurdle. But alternative financing arrangements can be found, either through venture capital, retained profit, or valuable support through

Who are Vietnam's eco-innovating businesses?

— **Hiep Thanh Limited**, formerly a commercial tea trader, turned its fortunes around from a low harvest, environmentally damaging business model to one with new revenue streams, safe agriculture and service provision. Both energy costs and greenhouse gas emissions have been cut with new partnerships formed across the value chain.

— **Viet Lien**, producers of guava leaf tea, made an ambitious innovation drive to put a stop to environmental degradation and poor business results. The company switched to organic farming, product diversification, service provision for the community, as well as turning the site into an eco-tourism destination.

— **Eco-Link**, a processor of organic teas, ginger and turmeric, was faced with limited access to organic raw materials, high transportation costs and a lack of visibility for the brand in the region's high-end market. Through eco-innovation, the company targeted the local organic market by changing the farming habits of suppliers and building relations with new stakeholders including local government and certification bodies.

— **Eco-Source**, a fertilizer producer from Ho Chi Minh City, is using eco-innovation to target the production of organic fertilizer and consulting services for its clients.

— **Hamona**, a coconut water producer, turned to eco-innovation to improve weak relations with farmers and improve its financial capacity.

— **Lenger Seafoods Vietnam** sells purified fresh clams to the domestic market. The company has submitted its new eco-innovative proposals to its Dutch mother company as it seeks to reduce high energy costs, overly high dependence on production areas, as well as addressing stiff competition and a modest, insufficient share of the domestic market.