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Land Resources Division
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LRD Country and Territory Partners in the Pacific

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Foreword

The Pacific is a vast region with small, isolated states and territories that for generations have honed the ever-present challenge of resiliency. This resiliency was sounder than ever in 2021 as COVID-19 continued to produce a haze of adversity for lives and livelihoods, demanding a surge in efforts to protect land and agricultural integrity, increase food security, step up nutrition and health, expand climate change response and address encroaching pests and diseases, amongst other emergencies and hazards.

The Pacific Community during the year picked up where it left off at the close of 2020 as the new COVID normal spread out its tendrils for a second straight year. Food security was at the top of the many COVID-related responses throughout 2021, and we responded by taking the lead in a series of Pacific-wide food systems dialogues that resulted in agreement for a formative and collaborative food systems initiative, in addition to other forward strides such as a Pacific food systems evidence brief and robust representation at the inaugural world Food Systems Summit organized by the United Nations in September.

While piloting new initiatives at the regional level, we also kept focus on the national and local levels, ensuring that resources were distributed and trainings were held despite COVID-associated lockdowns and closures. Trainings during the year included two on our coconut integrated program, as well as others on food cube technology, soil management, biosecurity, livestock and veterinary services, plant health and more. While the new normal required further innovation in online training, we were also able to complete several safe in-person trainings in our headquarters country of Fiji.

The new normal also did not stop the vital work of preserving and sharing genetic resources. The Centre for Pacific Crops and Trees (CePaCT) conserved 2231 accessions of 18 crops, while a series of seed consultations were held in Fiji,

Vanuatu, Samoa, Tonga, Kiribati, and Tuvalu and seed system trainings were held in Tuvalu and Kiribati.

The Pacific Community also did not cast aside its convening power during the year, bringing together the Heads of Agriculture and Forestry ministries and departments from across the Pacific for a successful virtual meeting to chart the way forward for agriculture and forests post-pandemic. Postponed in 2020 due to COVID, the bi-annual Pacific Week of Agriculture and Forestry will next be held in person in 2022 and hosted by the Government of Fiji.

Women and underserved communities were also challenged by a second year of COVID, and LRD continued to speak to these communities by entering new partnerships with Fiji, Papua New Guinea and Samoa through a new collaborative effort with our partner FAO on safeguarding threatened coconut diversity that includes specific activities for youth and women. POETCom was also very active during the year, identifying gender gaps in their Pacific Organic Standard and Participatory Guarantee System training manual and tools, and advancing the Building Prosperity for Women Producers, Processors and Women Owned Business through Organic Value Chains (BPWP) project in the Marshall Islands and Palau.

A second straight year of COVID-19 upending Pacific communities translated into a second straight year of novel outreach, project innovation and fresh ways of thinking and actioning collaborative efforts across the region. Signs of the COVID cloud finally lifting in this new year will not lessen SPC's drive and ambition for innovation. Together we can brighten the future for Pacific communities in times of both tumult and prosperity.



Karen Mapusua

Director - Land Resources Division
Pacific Community

The Pacific Community partners with Pacific peoples to realize a series of objectives that are ambitious, discerning, and responsive for communities in the region. The following is an overview of advances and successes in our five main objectives in agriculture and forestry in 2021.

Objective 1: Land, agriculture, forestry and genetic resources are sustainably managed and conserved

As the COVID-19 crisis in the Pacific drifted into a second year in 2021, it worsened in some countries, making natural and genetic resource management and conservation even more challenging. However, LRD used the resulting lockdowns and isolation to find new ways of working and a new focus on work that didn't require face-to-face interaction. Seed conservation and distribution was particularly strong during the year, with the LRD team collaborating region and worldwide to ensure this small kernel responsible for Pacific growth was resilient, and farmers and others were trained in seed systems, including production, breeding, tissue culture, data analysis and more. Genetic resources were also in good hands during the year, with strong accession action continuing to ensure they were safe and available: 2231 accessions of 18 crops were conserved by Centre for Pacific Crops and Trees. Despite lockdowns and periods of isolation, LRD was also able to hold trainings during the year, conducting two on its coconut initiative, and trialing other technology for a resilient Pacific future, such as food cubes. LRD also used the time in isolation during the year to update its technology and build foundations for future work, such as signing standard material transfer agreements with nine Pacific countries and further developing its facilities and important databases, such as GRIN-Global.

Accessions

As COVID-19 continued to affect LRD's genetic resources work during the year, the team tasked with propagating and protecting those resources worked overtime to ensure they were safe and available to the region's farmers and agriculture communities. For the year, a total of 2231 accessions of 18 crops were conserved by Centre for Pacific Crops and Trees (CePaCT) in vitro tissue culture, including 22 accessions conserved of breadfruit, and 38 endemic and indigenous tree species conserved in the CePaCT seed lab via cold storage.

CePaCT ensured that the accessions were diverse, with 66 percent from across the Pacific originating in 15 countries including, Cook Islands (61 accessions), Fiji (192 accessions), French Polynesia (20 accessions), Kiribati (16 accessions), Marshall Islands (3 accessions), Federated States of Micronesia (56 Accessions), New Caledonia (95 accessions), Niue (21 accessions), Palau (27 accessions), Papua New Guinea (376 accessions), Samoa (214 accessions), Solomon Islands (137

accessions), Tokelau (2 accessions), Tonga (37 accessions), Tuvalu (10 accessions) and Vanuatu (226 accessions). In Fiji, grafting of 4 selected accessions continued throughout the year at Naduruloulou Research Station. A total of 120 patch seedlings were grafted.

For further diversity, CePaCT also ensured accessions did not stop at Pacific region borders. During the year, it received four new accessions of Portugal taro and one new accession of pineapple sourced from Colombia at the request of Fiji.

Four accessions of sweet potato (2 accessions) and yam (2 accessions) were exposed to nuclear irradiation methodologies to develop new potential lines with good agronomic characteristics, such as high yielding, fast maturing, etc. and resistance to climate change and pests and diseases.

In Quarter 1 during the year a clearing of a backlog of virus indexing was initiated, with 286 taro leaf samples (282 accessions) sent to Manaaki Whenua Landcare Research New Zealand (MWLR) for virus indexing in March. Additionally, 13 taro samples, 9 yam samples and 2 pineapple samples were sent for next generation sequencing.

In Quarter 1 during the year, Aroid testing continued with support from MWLR. A shipment sent in quarter 1 containing 282 accessions was tested for 3 viruses. Additionally, DNA of 47 taro accessions were sent to the diversity array for genotyping. With the genotyping completed, data was shared with University of Queensland.

In Quarter 3, 195 samples (181 accessions) and 16 KRS samples were sent to MWLR. The LRD team also worked with MWLR to explore the development of primers for Fiji Disease Virus and taro reovirus that will be evaluated in 2022.

Seed conservation and distribution

As COVID in the region showed no signs of abating in its second year, seeds as a vital link to the Pacific's agricultural future were put into even greater focus. The CePaCT team was highly engaged throughout the year collecting, distributing and training on seeds. CePaCT began the year by exchanging four kilograms of sandalwood seeds with Fiji and one kilogram of the same seeds with Tonga. The seeds were collected and stored at CePaCT and exchanged with both countries to establish the foundation for conservation and domestication of a native sandalwood called "yasi" in Fiji and Tonga to support the development of a sustainable planted sandalwood industry.



In May, LRD developed a seed systems forum in Fiji to identify seed champions and their roles and a seed system model for the country. This unfortunately had to be postponed to a later date due to COVID restrictions. The team, however, was able to hold a series of consultations beforehand with Fiji, Vanuatu, Samoa, Tonga, Kiribati, and Tuvalu. The consultations resulted in identification of Pacific Seeds4Life (PS4L) coordinators for the countries. The focal points will serve in part to guide capacity building efforts for seed champions. Additionally, the consultations resulted in identification of training needs for each country that include seed production and post-harvest handling, breeding, characterisation and evaluation, data analysis, tissue culture, seed testing, pest and disease management, soil health management, organic farming, and agronomic practices.

At Sigatoka, Fiji agricultural research station, the LRD team guided the production and launch of a seed processing centre. The team also provided support for three additional seed centres in Samoa, Tonga and Vanuatu. Back in Fiji, CePaCT initiated the upgrading of its seed laboratory and seed drying room.

Seed planning and modeling also advanced seed progress during the year. The LRD team drafted a seed research plan for PS4L. Discussions were held with the Fiji Ministry of Agriculture (MOA) on ensuring PS4L was able to build on Fiji seed production guidelines. A draft of the guidelines for review was developed and distributed to partners, including MOA Fiji and Manaaki Whenua (Landcare Research). The guidelines are expected to be finalised by Quarter 1 of 2022. A draft seed system model was also developed in consultation with MOA for potential launch in Fiji and other countries. CePaCT collected data on 37 species during the year that it plans to ship to the Millenium Seed bank at Kew Gardens UK for long-term conservation.

The LRD team was also able to provide seed system trainings during the year to Tuvalu and Kiribati.

Research, trainings and capacity development

Trainings and capacity building continued to be challenging in 2021 due to COVID lockdowns throughout the Pacific and the subsequent lack of in-person contact. However, the LRD team was still able to initiate a number of activities, particularly close to home. In Fiji, a food cube project trial started at the LRD campus was expanded for distribution to Fiji National University, the Sigatoka Research Centre and Legalega Research Centre. In Nadroumai, the local women's club was trained in natural resources management.

The food cube project was also able to reach the atoll nations of Kiribati and Tuvalu, where 15 technical trainings for growing crops using the cube method were completed. As part of the project, CePaCT completed the characterisation and documentation of its crops provided to atoll countries. A value chain analysis and training was also provided to Tuvalu, providing farmers with knowledge on prioritising crops to promote production and marketing.

Also in Kiribati, the CePaCT team provided support for the identification and collection of important pandanus and coconut varieties and potentially the local fig tree for long term conservation. In Vanuatu, at the Vanuatu Agriculture Research Technical Centre, training continued on crop propagation, planting and maintenance.

In quarter two during the year, nine CePaCT staff (four males and five females) completed a mutation breeding training carried out by IAEA (International Atomic Energy Agency).

In Fiji, 15 MOA staff were trained on the use of the Climate Smart Agriculture App. An introductory training on the app for SPC-LRD was carried out beforehand. A follow up face-to-face training is scheduled for 2022 once COVID-19 restrictions are lifted.

LRD also stepped up its coconut initiative during the year, conducting two trainings under the Australia Centre for International Research (ACIAR) Coconuts for Livelihoods project: one on coconut field characterisation and tissue culture with the Samoa Ministry of Agriculture and Forests and one information session on the FAO International

Treaty on Plant Genetic Resources for Food and Agriculture standard material transfer agreement provisions with Samoa, Papua New Guinea and Fiji.

Further coconut knowledge efforts during the year included development of a video on coconut embryo extraction and collaboration with the University of Queensland to develop videos on somatic embryogenesis and embryo culture. A new research proposal launched in 2021 and currently under development focuses on the optimisation of coconut meristem/embryo cryopreservation to support long term in-vitro storage of taro and coconuts.

LRD's coconut work also included a coconut plantation review report that was submitted to the Queensland Department of Agriculture and Fisheries (QDAF). Additional reports sent to QDAF included one on a coconut veneer facility and one on existing education and training capacity in the Pacific. The LRD Genetic Resources team also completed a review of global coconut stem utilisation.

The CePaCT team submitted a paper on yam viruses to the peer-reviewed journal *Viruses* that was accepted. The paper is undergoing revisions and will be published in 2022. CePaCT also continued its project of fingerprinting and analysis for its aroid collections. The project, a collaboration with FAO, has been extended to Sept 2022.

In Sigatoka, Fiji, maintenance of sand dune plots for protection of the indigenous Dilo (*Calophyllum inophyllum*) tree was carried out in February 2021. Weeding and cleaning of the Dilo trial plots optimizes the growth and seedling establishment. Further maintenance, as well as maintenance at a second site at Vunimago, had to be postponed to 2022 due to COVID-19 related challenges.

Work at various LRD supported farm sites in Fiji also continued during the year. On sites at Digove, Tokoni, Baravutu and Korobua, work hours were increased to expand productivity and ensure the farms are fully functional. In 2021, a total of 67.76 hectares of land was planted.



Strengthening food security for Pacific atoll nations during COVID-19

One of the many challenges faced by Pacific atoll countries is the production of good quality food to feed their people both on the main and outer islands. Food production on atolls is influenced by a narrow genetic base, poor control of pests and diseases, poor soil conditions, limited water availability, climate change impacts, and fading traditional knowledge.

These challenges were exacerbated in 2020 and 2021 as the COVID-19 wave swept across the Pacific. Though atoll nations were mostly spared disastrous outbreaks, their food production remained reliant on the inputs of other countries in the region. Since 2019 SPC has focused on atoll agriculture to address current and prospective future challenges and support resilient livelihoods and food and nutrition security. This work addresses SPC's Strategic Plan to develop and promote sustainable practices geared toward atoll specific needs. These include the promotion of climate smart technologies, crop varieties and improved livestock breeds suitable for atoll conditions, as well as marketing of locally produced foods.

In 2021, a series of consultations was held with Tuvalu and Kiribati country counterparts to identify key training needs. The identified training needs were developed into materials that were rolled out to support agriculture programmes in the atolls. Additionally, a food cube trial under the Tuvalu Food Futures project was established to determine if the technology would work in the challenging context of Tuvalu.

COVID restrictions resulted in several consultation meetings and technical trainings done virtually via Zoom. A total of 15 virtual trainings were facilitated by LRD for Kiribati and Tuvalu. Trainings were conducted for Tuvalu stakeholders that ranged from local farmers to backyard gardeners in Funafuti and the outer islands.

In collaboration with DT Global and Live and Learn, the food cube trial was conducted in a low-lying atoll environment to investigate whether gardens could be established using only on-island resources and compost produced by the Solid Waste Authority of Tuvalu. "The trainings are valuable to us, especially when dealing with growing crops on atoll islands," stated Mr Itaia Lausaveve, Chief Technical Advisor of Live and Learn, Tuvalu. "The training on food preservation in particular was very interesting and insightful."

After successful outcomes in Tuvalu and Kiribati, food cube technology trials were extended to urban Fiji, at the SPC LRD Narere campus, Fiji National University's College of Agriculture, Forestry and Fisheries, and an agricultural research station in the West on Fiji's largest island, Viti Levu. At the virtual Pacific Heads of Agriculture and Forestry meeting in August 2021, at least nine Pacific countries and territories expressed interest in trialing the food cube technology. The majority of the interested countries are implementing rapid food and nutrition security initiatives, including backyard gardening and value chains, to address their national food and nutrition security response plans in the wake of COVID-19.

Since the start of COVID outbreak in the region, the LRD team has been in continuous consultation with research partners in readjusting these vital food security activities to virtual/online meetings, trainings, and discussions. The food cube trial results have demonstrated that revitalising Pacific Islands' existing traditional farming systems with food cube technology can mitigate the impacts of climate change, natural disasters and other emergencies, such as pandemics, to improve food and nutrition security



Programme development and technology

LRD was able to continue its forward progress on conservation efforts during the year to ensure programme development had an eye toward the future and that technology was adopted and refined for current effectiveness and future adaptability.

Part of this work entailed ensuring that Pacific Island nations could receive CePaCT germplasm to keep their agriculture sector and biodiversity healthy. LRD signed ten standard material transfer agreements during the year for germplasm distribution with the Cook Islands, Fiji, Australia, Solomon Islands, Tonga, Federated States of Micronesia, Niue, Republic of Marshall Islands and Papua New Guinea. The LRD team also started drafting three standard operating procedures for conservation, distribution and cryopreservation.

In Fiji, agroforestry for conservation work continued with the completion of 15 agroforestry plots in the Labasa and Tunulua catchments with support from the REDD+II project. LRD's Ridge to Reef (R2R) project continued with plot establishment in the Ba, Waidina and Vunivua catchments. R2R also worked on an analysis of litter samples. In Draubuta, Emalu and Sigatoka, Fiji, 4 hectares of mixed native species were planted.

The LRD Genetic Resources team had the opportunity during the year to ensure its infrastructure and facilities were updated and stayed in peak operational form. This included sourcing four air purifiers to maintain the sterility of CePaCT and help minimise contamination in cultures. Other improvements included upgrading the molecular laboratory with new equipment, including a PCR machine, freeze-dryer, tissue homogeniser and gel electrophoresis equipment.

A design for upgrading of the DNA facility was also finalized during the year, in addition to a design for a Cryolab. The new quarantine greenhouse facility on the LRD campus was granted approval as a 'Biosecurity Approved Premises' under the Biosecurity Authority of Fiji.

The Genetic Resources team additionally led the evaluation of the GRIN-Global (Genetic Resources Information Network) database, with full implementation to progress in 2022 when a new Curator is onboard. Other steps forward included troubleshooting and debugging of an inventory app being undertaken in collaboration with the World Potato Centre database manager. Steps were also taken during the year to set up GrinGlobal Database, including physical setup for barcoding and database trials.

In Fiji, LRD helped lead development of a draft code of practice for wood processing. The code is awaiting Fiji Ministry of Forests action before finalization, which will include a national consultation. Other wood and forest processing work in Fiji during the year included a report on the review of treatment plants and sawmill regulations, and a review of timber utilisation research. A draft strategy for non-timber forest products was circulated for inputs and comments.

LRD planting and processing sites were also improved during the year, furthering programmes for important crops. Upgrading of the virgin coconut oil processing facility in Rabi, Fiji was completed. Coconut tree planting started in March, with 3000 seedlings planted. The LRD team plans to expand the site by planting a total of 10 hectares.

Advances in organic agriculture were also realized during the year. The Participatory Guaranteed System (PGS) for the Solomon Islands was approved. After February 2021, 48 farmers were certified organic, with a total of 50 hectares converted for organic agriculture. New PGS groups were approved in Rotuma, Fiji and the Solomon Islands. Development of the Palau National Organic Policy was also in progress. In New Caledonia, thanks to certification, SolAgro ngali nuts are now being marketed as organic.

A photograph showing two individuals in a field. On the left, a man in a dark blue t-shirt is leaning forward, looking down at the ground. On the right, a woman wearing a light blue t-shirt, light blue shorts, glasses, and a light blue surgical face mask is also leaning forward, working with the soil. The background is a lush green field with rows of plants. The overall image has a teal/blue color cast.

Focus on Women and Youth

Expanded in 2020, LRD continued its focus on integrating women and youth into every aspect of its work during 2021 to ensure that these traditionally underserved communities are brought into the conversation and have equal access to agriculture, forestry and related livelihood opportunities. LRD continues to write these communities into programme and project design from the start so that their acceptance and impact is recognized from day one.

Partnerships were initiated with Fiji, PNG and Samoa in 2021 under a new FAO project on safeguarding threatened coconut diversity, with specific activities for youth and women. After project signing and the distribution of agreements to partner countries, activities will start in 2022. Plans underway have included three country workshops in 2022 to include women and youth.

Examples of integrating women into programming during the year include the CePaCT training mutation breeding, where of the nine participants, five were females.

In another women and youth focused project, 38 women in Nadroumai, Fiji received 4,000 dalo suckers supplied by the local women's project to be planted on agroforestry and other individual farms. The project also included a hands-on field training involving 50 youth.

As new programmes launch and trainings increase with the post-COVID openings of countries and communities in 2022, the strong focus on women and youth participation will be extensive.



Developing the Pacific's first regional animal health and production framework

The growing threat of emerging transboundary diseases in the Pacific has produced a knock-on effect in the livestock industry. This includes the impacts of endemic animal diseases, poor nutrition and waste management, limited genetic diversity and poor animal welfare contributing to declining livestock productivity. Data on animal production from the majority of countries in the region revealed the Pacific imported over 150 tonnes of animal products in 2019. This growing demand for livestock products and a high level of imports has not been matched by growth in local production.

To realise livestock industry potential, there is an urgent need to identify its key challenges, constraints and opportunities so that strategies can be developed and resources mobilised to support and improve animal health and production services in Pacific countries.

The LRD Animal Health and Production team hosted two meetings with the Pacific Heads of Veterinary and Animal Production Services (PHOVAPS) in April 2021 to review and engage country feedback on an animal health and production framework, as well as to identify priority areas for regional collaboration in strengthening animal production services.

This strong collaboration at both national and regional levels led to development of the first ever Pacific Animal Health and Production Framework (PAHPF). The Framework seeks to strengthen animal health and production systems, ultimately contributing to livelihoods, food and nutrition security and healthy Pacific communities.

The first step in Framework implementation will involve the streamlining of PAHPF strategic priorities within national animal health and production programmes through policy reviews and updates and development of strategies and action plans. Further plans include capacity building to ensure PAHPF is directly contributing to improving livestock production, as well as initiation of a platform for community and information sharing.

The PAHPF was validated by the Pacific Heads of Veterinary and Animal Production Services (PHOVAPS) focal points from member states represented by Directors of Veterinary and Animal Production Services and partner organizations. This endorsement has led to secretarial and technical support for PHOVAPS from the Australia Department of Agriculture, Water and the Environment (DAWE), New Zealand Ministry of Primary Industries (NZMPI) and World Organisation for Animal Health (OIE).

Director of Agriculture, Forestry and Fisheries for Niue, Poi Okenese, said, "The lack of veterinarians in the livestock industry is an ongoing issue that we have experienced over many years. As these challenges are very much across the board in the Pacific, I thank LRD for hosting this consultation, which we hope will pave the way for strengthening our animal health production services."

LRD will play a lead role in PAHPF implementation, in collaboration with PHOVAPS and development partners, to support full realisation of Framework priorities. LRD hopes that the PAHPF will provide a foundation for institutional strengthening of veterinary and animal production services and policy reforms, as well as guide investments and programmes to strengthen livestock production in Pacific countries.



Objective 2: Enhanced ability to meet local and international market requirements for agriculture and forest products

Though in-person trainings on agriculture and forest products were challenging for a second year due to COVID-19, the LRD team still managed to find space to initiate them, whether online, or in-person during windows where face-to-face contact was administrable and safe. LRD held several trainings and introduction sessions on the Pacific Organic Standard and Participatory Guarantee System, enhancing organics knowledge and uptake during the year. Fresh collaboration on biosecurity also was launched, through a series of technical meetings and assessments. These efforts will move toward action on the ground as countries and economies continue to re-open in 2022.

Training and Capacity Development

Despite COVID restrictions throughout the Pacific, trainings on the Pacific Organic Standard and Participatory Guarantee System (PGS) were still able to take place. In Quarter 1 of the year, a PGS training was conducted in Rotuma, Fiji with the participation of 40 males and 14 females. The training enhanced knowledge on the PGS and organic farming. Additionally, a PGS introductory training was conducted in March for the QVS Old boys Mushroom group.

In the second quarter of the year, a PGS introduction session was held for ADRA Fiji in the community of Koro. Other PGS events during the year included: two events on resilience and PGS introduction to the Navua, Fiji PGS group, an introduction to PGS and organics to Cocoa Fiji (the Fiji Cocoa Growers Association), a meeting on organics held at Rotuma Island, Fiji, an organic and PGS introduction at New Valley Produce, Fiji, and a business plan development training in the Republic of Marshall Islands.

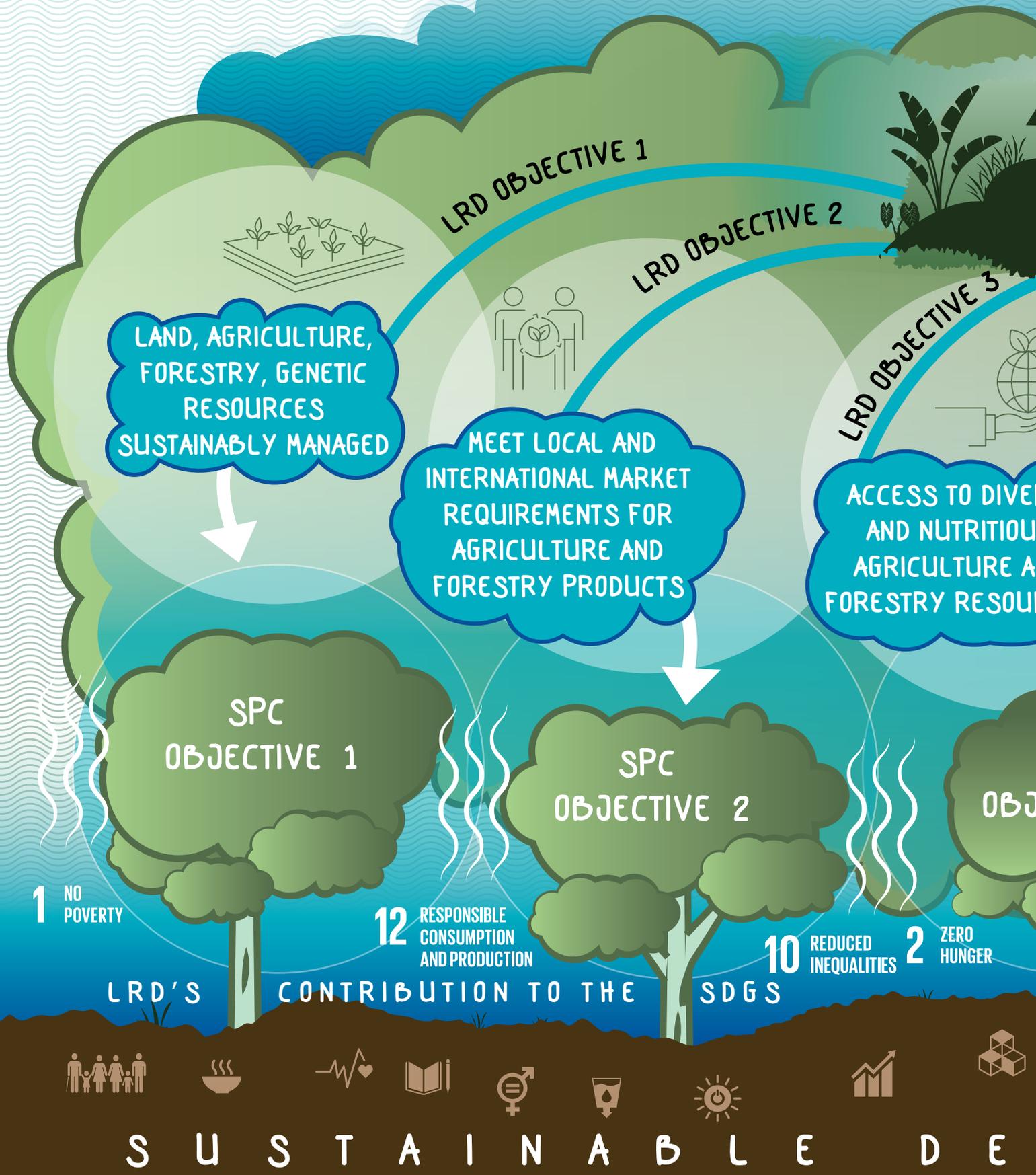
Other work in organics during the year included the completion of a training module for family farm financial management. The Family Farm Business Training Module is designed to support farmers, families in farming, farming producers and vendors that are actively working in agricultural sector, targeting those that have limited financial understanding of how to start a farming business using a family-based approach.

Collaboration and project investment

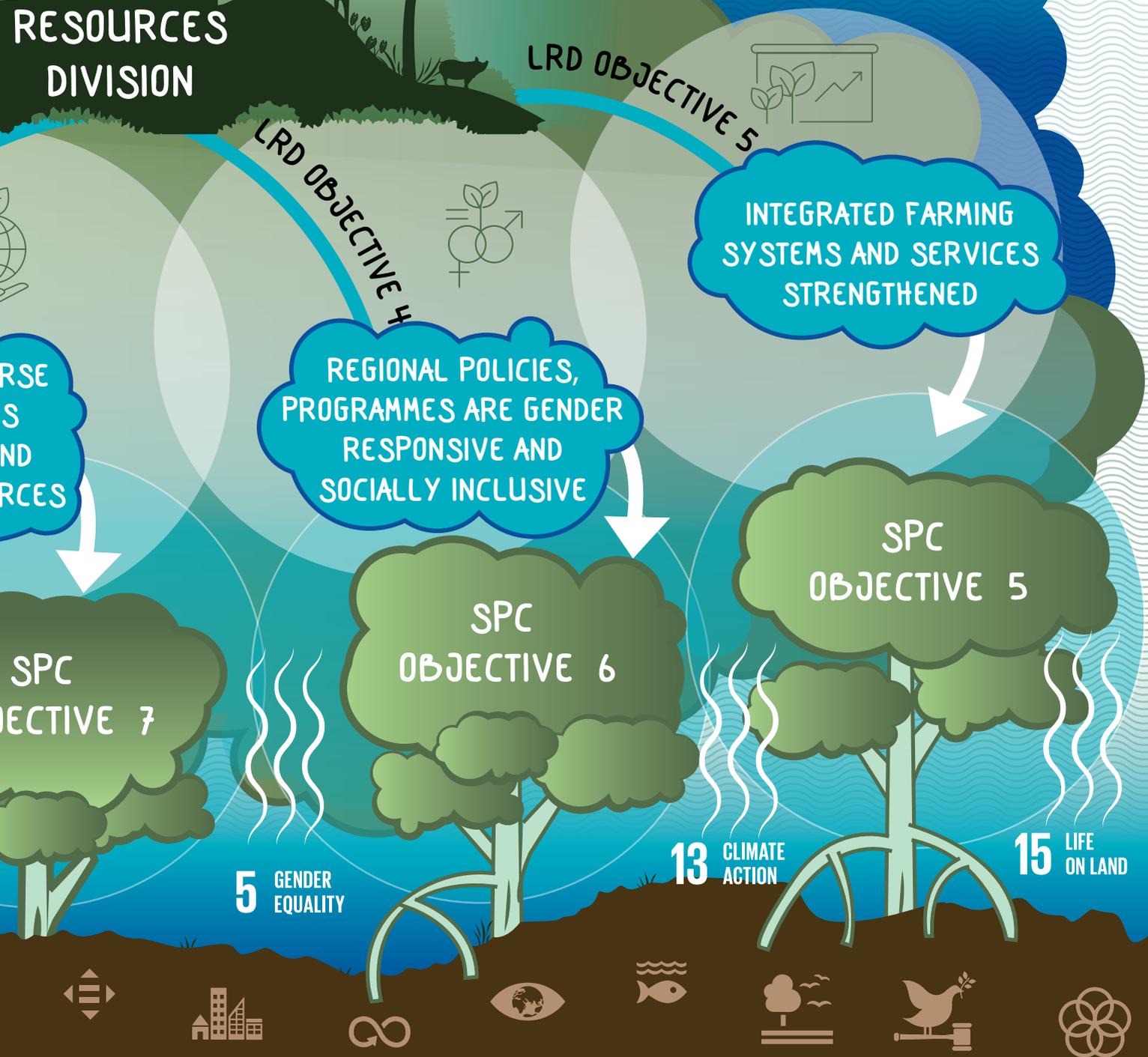
The LRD ePhyto biosecurity project for implementation in Papua New Guinea, Marshall Islands, Palau, Cook Islands, Tuvalu and Tonga got underway during 2021. Four technical meetings were held with participating countries and three working group consultation meetings were completed along with a readiness assessment form for Papua New Guinea, Marshall Islands, Palau, Cook Islands, Tuvalu and Tonga. A GeNS ePhyto System was created for PNG, Marshall Islands, Palau, Cook Islands, Tuvalu and Tonga. Testing of the ePhyto exchange has commenced for Marshall Islands, Cook Islands and Tonga, with Fiji, NZ and Samoa.

In Palau and the Republic of Marshall Islands, consultants were engaged during the year to help complete their agri-business plans. The plans serve to guide the process of investment in agri-business development. The business plan will inform value chain investment for the project.

Also during the year, the BPWP Project (Building Prosperity for Women Producers, Processors and Women Owned Businesses through Organic Value Chains) sponsored registration fees for 10 women to attend the UNODC (United Nations Office on Drugs and Crime) and UNDP (United Nations Development Programme) Women in Business Workshop hosted by the Palau Chamber of Commerce.



LAND RESOURCES DIVISION



DEVELOPMENT GOALS

Objective 3: PICTs have access to diverse and nutritious agricultural and forestry resources resilient to the impacts of disasters and climate change

Distributing agricultural and forestry resources was challenging for the second year running due to COVID-related lockdowns and country closures. However, the LRD team was still able to complete 11 distributions to a diversity of countries across the Pacific. These distributions provided momentum for an expansion of access to agricultural and forestry products in 2022. The LRD team also stayed busy cementing partnerships and collaborative efforts, such as a new proposed partnership with the World Vegetable Center, to further build a solid foundation for agricultural knowledge sharing and more improved resources access in the new year.

Crop procurement, distribution and promotion

The LRD team managed to keep up with its agricultural crop distributions in 2021 despite transportation difficulties due to COVID restrictions. In 2021, a total of 11 distributions were made across the region: three in Quarter 1, two in quarter 2, three in quarter 3 and three in quarter 4. In quarter 1, distributions included 380 coconut embryos to the University of Queensland, Australia, 140 sweet potatoes to the Cook Islands, and 95 banana and 80 cassava plantlets to Fiji.

In quarter 2, the Cook Islands benefited from 200 breadfruit, and the Solomon Islands received 600 sweet potato and 100 cassava plants. In Quarter 3 Tonga received 32 taro, 420 sweet potato, 95 banana, 30 cassava and 130 swamp taro plants, while in the Federated States of Micronesia distributions included 300 breadfruit. In Niue, 60 cassava, 280 sweet potato and 34 yams were distributed.

In Quarter 4, the Marshall Islands received 8 accessions of sweet potato and 200 plants, along with 1 accession of banana and 15 plants, 2 accessions and 30 plants of pineapple, 7 accessions and 70 plants of swamp taro, and 1 accession and 30 plants of breadfruit. In Cook Islands, distribution included 8 accessions and 228 plants of sweet potato, 1 of breadfruit and 23 of cassava. In Papua New Guinea there were 2 accessions and 22 plants of xanthosoma, 1 accession and 5 plants of taro, 1 accession and 35 plants of yam, 2 accessions and 30 plants of breadfruit, 2 accessions and 28 plants of cassava, and 2 accessions and 35 plants pineapple.

In the Federated States of Micronesia, agricultural materials were distributed to three outer islands, nine villages/municipalities on the main island and 200 farmers. In Tonga, five breadfruit accessions from CePaCT were planted around Tonga tapu in farmer's fields.

In Fiji during the year sweet potato evaluations got underway. A planned sweet potato evaluation for the Cook Islands was postponed to 2022. CePaCT plans to follow up on Fiji and Cook Island trials in 2022, in addition to follow-ups on other previous distributions. An assessment of the seed production programme in Sigatoka and the Legalega Research Station in Fiji targeted support to collating and strengthening the seed unit, which can also benefit the Pacific as a whole.

Collaboration and investment

Though collaboration remained difficult during the year, the LRD team still managed to reach out to partners and potential partners to lay the ground for improved and future cooperation. Efforts during the year included discussions with the World Vegetable Center and the LRD management team on an MOU (Memorandum of Understanding) for future cooperation. Discussions with the Genebank Manager at the Center focused on collaboration on germplasm characterisation and evaluation for the development of nutritious and resilient vegetable varieties in the Pacific. A new collaborative effort was also opened up with the Marc Delorme Research Institute of Ivory Coast on coconut germplasm. Follow-up contact with Kew Gardens, UK in regard to cryopreservation will take place in 2022.

New work with partners in the Pacific during the year included a proposal developed with the Australia Grains genebank on implementation of GrinGlobal (Germplasm Resource Information Network). In consultation with Manaaki Whenua Land Care Research New Zealand, the LRD team secured approval to use resources under the Pacific Seeds for Life project to engage country specific coordinators to support project implementation. The coordinators will also support other LRD work in countries that include Tonga, Samoa, Kiribati, Tuvalu and Vanuatu.

Additional collaborative steps during the year included a partnership with Palladium International Ltd through DFAT (Australia Department of Foreign Affairs and Trade) to validate drought screening methodologies for taro. Fiji, Vanuatu and Samoa are set to benefit from the seed systems model developed by the LRD Seed Systems Specialist after discussions in 2021 to operationalize the model.

Objective 4: Regional and national policies, programmes and services in agriculture and forestry are gender responsive, socially inclusive, and promote and protect cultural heritage and human rights

As in 2020, the COVID-19 emergency slowed progress on LRD's gender inclusion and cultural heritage and human rights efforts. However, the team was still able to support women's groups and individuals on the ground in projects in Fiji, Palau and the Republic of the Marshall Islands. LRD's POETCom initiative was particularly engaged during the year, managing its long-term project for women producers and making other strides such as identifying gender gaps in its organic certification system and hosting a side event at the Triennial Conference for Pacific Women, held in March.

Gender and youth investment and support

As face-to-face contact remained difficult during the year, the LRD team worked mainly through its on-the-ground partnerships to ensure gender investment and support remained robust. In Palau, for example, 10 women were supported through the payment of registration fees for the workshop 'Protecting Your Business Against Corruption.'

Strong women's participation continued in Nadroumai, Fiji, where 38 women received 4,000 dalo suckers supplied by the local women's project to be planted on agroforestry and other individual farms. The project also included a hands-on field training involving 50 youth. Women were also prominent in the CePaCT training mutation breeding held in Fiji, where five of the nine participants were females.

Partnerships initiated during the year with women at their centre included an agreement with Fiji, Papua New Guinea and Samoa on an FAO project that includes specific activities for youth and women. Project activities will start in 2022, with planning underway for three country workshops in 2022 to include women and youth.

POETCom during the year also reviewed gender gaps and opportunities in their Pacific Organic Standard and Participatory Guarantee System training manual and tools and submitted the complete report to the SPC PROTEGE project for inclusion in a POETCom governance review.

The POETCom team was also busy during the year in the Republic of Marshall Islands (RMI) on managing the Building Prosperity for Women Producers, Processors and Women Owned Business through Organic Value Chains (BPWP) project. A business plan development workshop was held in Majuro, RMI targeting women actors in agricultural value chains. The BPWP project also co-hosted a side event titled 'Women of the land and the sea' at 14th Triennial Conference of Pacific Women in March. This was followed by the first POETCom newsletter themed on women's inclusion, with features on cultivating gender equality in the organic agriculture sector in the Pacific and strengthening partnerships and connecting local value chains, among others. POETCom also initiated a women's chapter in its membership.

Social Inclusion

POETCom worked with its partners and governments in the Pacific during the year to ensure planning was inclusive and holistic. In Palau and RMI, business plans to identify project investment in value chains were initiated and are in progress in 2022.

Also in Palau, drafting of the National Organic Policy was launched with LRD support. Drafting continues in 2022. A situational analysis of organic agriculture in Palau was also completed during the year. In Fiji, a final draft of the national organic policy has been completed and is awaiting cabinet submission. In Vanuatu, LRD is providing ongoing support for finalisation of the draft Vanuatu Seed Policy.

LRD successfully supported validation of the Vanuatu Seed Systems Strategy, which is currently being edited before publishing. Finally, LRD began a revision of the Pacific Seeds System roadmap, which is also ongoing and due for completion in 2022.



Objective 5: Integrated farming systems and services strengthened

With the majority of LRD teams grounded during the year, focus was on building the foundation for the thriving farm systems of the future, in addition to finding new ways to tackle growing concerns such as animal and plant health that were exacerbated by COVID-19. The LRD team led completion of a Pacific animal health and production framework, in addition to completing and trialing an E-PARAVET module. Vital trainings, both online and in-person, on current issues including plant health, soil testing, protected cropping and pests and diseases and more were prominent during the year. The continuing COVID emergency also kept food security in the spotlight and LRD responded with a number of initiatives, include food cube technology trials and publication of a climate change and food security analysis. Strong work on the building blocks of agriculture – soil and plants – was also evident, including the drafting of a comprehensive plant health manual that will be published in 2022.

Knowledge investment and management

LRD began 2021 by showing strong support for laboratories and other knowledge investment. In Quarter 1 during the year, support was provided to Vanuatu for their tissue culture lab design and equipment purchase. LRD also supported Samoa for their lab equipment procurement needs.

Also in Quarter 1, LRD provided support for Kiribati in regard to a proposed coconut genebank design and development. In Quarter 3, the team provided additional genebank support, working with Fiji, Samoa, Papua New Guinea and the Solomon Islands on establishment of genebanks in these countries.

In Tuvalu during the year, LRD engaged a consultant to help complete a value chain analysis focused on supporting local food production and marketing. The analysis was informed by a previous vulnerability assessment report for the country. LRD also provided support to the Tuvalu livestock sector through the design of a breeding center. Additional animal health support during the year came through finalizing key milestones related to strengthening animal health and production. LRD successfully engaged a Vet to complete this work. LRD also collaborated with its video production company, Pacific Way, and the Fiji Ministry of Agriculture to develop two African Swine Fever awareness videos – one targeting farmers and the second targeting biosecurity and livestock extension officers.

Other animal health work during the year included a Pacific Animal Health and Production Framework finalised and endorsed by the Pacific Heads of Agriculture and Forestry Services at their biannual meeting in August. With the LRD animal health team grounded during much of the year, it was nevertheless able to develop an E-PARAVET module and pilot it in Fiji and Vanuatu with 52 participants. Additionally, training guidelines on poultry and pigs were developed and disseminated to the PACPs (Pacific African Caribbean and Pacific countries). The LRD team also engaged with consultant experts to develop a design for small livestock production that will be promoted throughout the Pacific.

In light of COVID and growing agricultural challenges due to climate change and regional growth, food security remains a highly important issue throughout the Pacific. In response, LRD published a participatory climate change and food security analysis framework during the year. It also continued its soil work, completing soil sampling guidelines and a soil analysis manual that were both due to be published in late 2021 or early 2022. LRD soil experts also worked during the year with the University of the South Pacific School of Agriculture and Food Technology (USP-SAFT) to develop correlation studies that compare soil test results obtained from standard soil test kits with wet chemistry (field method results and lab method results). The completed correlation studies were shared with Samoa, Tonga and Fiji.

Additional food security related work that expanded during the year was the Tuvalu Food Futures Initiative, which focused on food cube technology and compost demonstration and production. The innovative wicking and self-watering garden beds are new technology that can support production, particularly in atoll nations. In Phase 2 of the Initiative, Fiji and Kiribati joined the trials in Tuvalu. Food cubes were delivered to field trial sites in Suva and Sigatoka, Fiji early in the year. Also, a concept note on upscaling food cube technology was delivered to DFAT – the Australia Department of Foreign Affairs and Trade – to discuss partnership opportunities. LRD additionally worked with a value chain specialist to establish priority value chains in Tuvalu and Kiribati for agricultural products that can be grown in the food cubes and promoted through marketing and dietary guidelines.

LRD also continued its nutrition work during the year, collaborating with Central Queensland University through the ACIAR project Protected Cropping Structure for High Value Chains to initiate new social science research on promoting food and nutrition sensitive agriculture through the Fiji Ministries of Agriculture and Health. A working group was established to guide the research design and roll out research activities.



Training, technical support and documentation

As with other LRD's other hands-on related work during the year, in-person training and technical support was challenging. However, LRD was able to deliver several trainings and provide support throughout the COVID related lockdowns and closures, ensuring that all participants received training and support in safe environments. In Tuvalu and Kiribati, for example, LRD held a series of Zoom consultations to identify training needs and provide remote support for continuity of in-country activities and food security planning in response to COVID-19.

Additional support included the sending of crop traits to several Pacific countries to help keep farming systems viable during COVID. Drought and salinity tolerant crops were sent to Tonga, Federated States of Micronesia and Niue in Quarter 2. These included sweet potato, banana, cassava, swamp taro and yam. In Quarter 3, Marshall Islands, Cook Islands and Papua New Guinea also received sweet potato, banana, cassava, swamp taro and yam.

In the Cook Islands, the focus was on livestock, with technical support and guidance provided for a training targeted at the farmer level to be facilitated through ministry officers on the ground. LRD continued expanding its African Swine Fever (ASF) work throughout the year. ASF training was conducted for the Biosecurity Authority of Fiji and other livestock stakeholders. ASF training was also completed in the Solomon Islands, Samoa and Vanuatu. Along with the trainings, ASF test kits were distributed to Vanuatu, the Solomons, Nauru, Kiribati and Tuvalu. In Fiji, a meat hygiene and safety PARAVET training was conducted in the Western and Central Divisions.

LRD remained active in the livestock veterinary field during the year as well. The Pacific Heads of Veterinary and Animal Production Services (PHOVAPS) Charter was developed, articulating a new governance and operational structure that was endorsed at the Pacific Heads of Agriculture and Forestry Services meeting in August. A new vet was recruited to facilitate implementation of PHOVAPS activities. LRD was also able to collaborate with the Fiji Ministry of Agriculture during the year for PARAVET trainings that benefited 55 extension, livestock and biosecurity officers.

In Samoa, a soil testing training was held for Research Officers. Further training on soil testing protocols will be promoted to five other countries in 2022: Vanuatu, Fiji, Tuvalu, Kiribati and Tonga. A soil health training conducted on Beqa Island, Fiji in April, in collaboration with the Ministry of Agriculture, benefited 43 farmers from 4 villages.

The LRD team also helped launch a soil portal that was endorsed at the Pacific Heads of Agriculture and Forestry Services meeting.

Also in Fiji during the year, the LRD team furthered its food security work by providing support for protected cropping farmers. The team provided training for farmers in Sigatoka and monitoring of the farms continued throughout the year. The protected cropping farmer manual was completed and was in its field testing stages during the year. It will be finalised and published in 2022. Other work in Sigatoka included the establishment of two research plots to test compost recipes against selected vegetables. Data collection is ongoing and results will be finalised and promoted to countries. LRD also collaborated with the Fiji Ministries of Agriculture and Health on food and nutrition sensitivity research, developing and launching work on how to cooperate in linking food and nutrition to agriculture.

More food security work that took place in Fiji included support for protected cropping farmers in the communities of Qereqere, Nawamagi, Tavua and Nasau. The LRD team is continuing its monitoring into 2022 to advise farmers for all field trials. Training in these communities is ongoing.

As the threats and uncertainty from pests and diseases in the region did not pause for COVID-19 during the year, LRD also worked to keep current its actions on plant health and pest infestations. The team drafted a Sustainable Plant Health System Framework during the year to guide regional collaboration on streamlining activities that contribute to sustainable plant health in countries, not only to support increased food production but also food and environmental safety. The draft framework will be circulated to countries in 2022.

Plant health clinics benefiting 65 participants were held at the national level during the year for Fiji, Samoa and the Solomon Islands. LRD successfully adopted the Centre for Agriculture and Biosciences International (CABI) online plant health clinic module to continue to provide the trainings. The clinics helped agriculture extension staff gain confidence in their pest and disease knowledge. Plant health champions were supported in Fiji, Samoa, the Solomon Islands and Tonga. In the Solomon Islands, a training for trainers was completed, with eight trainers receiving their CABI licenses. Successful Plant Health Clinics were also completed in the Honiara Municipal Market and in Northwest Guadalcanal in partnership with Save the Children. Officers from the Solomon Islands Ministry of Agriculture and Livestock collaborated with an LRD representative to conduct a plant health and disease awareness session in Tulagi, Central Islands Province.



In Fiji, a draft Fiji Plant Health Clinic network outline was developed and shared with Fiji MOA for feedback. A pilot plant health hospital concept was also developed for Fiji, with launch due in 2022. LRD developed and piloted standard operating procedures in Fiji for Plant Health Clinics. A Plant Health Clinic policy brief to support awareness and scaling of clinics in the entire region was also developed. The Plant Health Manual was drafted and edited during the year and will be finalized and published in 2022.

LRD's work on stopping the spread of the Coconut Rhinoceros Beetle (CRB) continued to expand during the year as the CRB threat grows in ten Pacific Island countries and territories and could spread further. LRD worked with its partners at the Ministry of Foreign Affairs and Trade (MFAT) New Zealand to establish a CRB steering committee. LRD continued to provide technical advice on CRB surveillance and management with its partner stakeholders during the year. With the MFAT partnership, LRD collaborated with Ag-Research New Zealand, the University of Queensland, Papua New Guinea, Solomon Islands and Vanuatu on research and management strategies to address threats to the coconut industry. Letters of agreement for CRB awareness and management were completed with two stakeholder partners – the Ministry of Agriculture, Livestock, Forestry, Fisheries and Biosecurity in Vanuatu and the National Agriculture Quarantine and Inspection Authority of Papua New Guinea.

Other CRB work during the year included development of a database system to monitor the distribution and clean up campaigns in target countries. The CRB information system LRD developed was updated during the year, with additional functionalities, maps and data from countries. A CRB pest alert was also completed and distributed in affected countries. The LRD developed CRB Manual was finalised during the year, with 500 copies printed for distribution. The manual, containing emergency response procedures for individual countries, as well the

region, was distributed to the Solomon Islands and is awaiting distribution to other countries due COVID restrictions. LRD also completed a CRB awareness video during the year, and is planning a second video for 2022.

Another Pacific pest LRD tackled during the year was the fall armyworm. LRD provided fall armyworm lures to Vanuatu for monitoring purposes and as an early warning system. Additionally, 30 cartons of armyworm pheromones and fruit flies were distributed to the Solomon Islands as an early warning system to support surveillance and help prevent further spread in West New Britain, as well as Bougainville in Papua New Guinea.

LRD was also able to build on progress during the year on the *Metarhizium* fungus that can be effective in combating insect pests. Equipment for *Metarhizium* mass production was procured and established in the LRD lab to improve the efficiency of the fungus' mass production. LRD was able to acquire 11 kilogrammes of *Metarhizium* for each of its partner countries in quarter three during the year. A bioassay trial to detect the potency of *Metarhizium* was completed, with results currently being analysed. The LRD team also began planning for training on *Metarhizium* mass production and field application for KIK (Kokonas Industri Koperesen) Papua New Guinea, the National Agriculture and Quarantine Inspection Authority and Bio-Security Vanuatu. A further training in Papua New Guinea on bioassay techniques was completed for PhD researchers and government staff.

Other trainings that LRD helped guide during the year included co-facilitating a Participatory Guarantee System organic certification workshop on Rotuma Island, Fiji and a virtual training on pests and disease description, diagnosis and management using the CABI modules for Samoa and Tonga, after being held in Fiji and the Solomon Islands. In total, 15 virtual trainings on soils, pests and diseases, value chains and CRB, including animal and plant health clinics, were completed for Tuvalu and Kiribati.



REDD+ helps Fiji communities protect natural resources and livelihoods

The Land Resources Division, together with its partner GIZ, has been assisting Pacific communities in Papua New Guinea, Vanuatu, Fiji and Solomon Islands in their REDD+ readiness phase throughout the past six years. The project operated at three distinct but interlinked levels: regional, national and local.

At the regional level, the project supports the structures needed for forest and biomass inventories, focusing on methodologies for detecting forest degradation. National level initiatives include the project assisting Melanesian countries to conduct their readiness activities and develop national REDD+ strategies, including safeguarding information systems, measuring, reporting and verification systems, reference emission levels and benefit sharing mechanisms for potential revenues from REDD+ activities.

At the local level the project supports the development and implementation of demonstration activities and pilot projects that will help to inform, verify and adapt REDD+ strategies developed at the national level.

Though COVID-19 related travel restrictions delayed project execution in 2021, the LRD team was still able to focus on the country where it is headquartered, Fiji.

A community exchange REDD+ workshop held in Fiji during the year provided a space for villagers from the communities of Drawa, Draubuta and Nakavu to exchange their experiences with REDD+ implementation activities and discuss its benefits. The communities are national REDD+ sites for Fiji and have been contributing to REDD+ readiness reporting for the country. The workshop served to plan a way forward with the relevant government Ministries on the monitoring of reforestation, plantation and nursery sites in the communities.

The REDD+ program has positively impacted the three communities. In Draubuta, REDD+ led to the reforestation of grasslands and degraded lands close to the village and has improved how the communities utilise their land and natural resources. It has also resulted in village development. For example, funds collected from the government and organisations visiting the village (for awareness, training and field work) have been used for construction of the village hall and purchase of sewing equipment for the women's group.

In Nakavu, the project helped protect the surrounding forest area through the leasing of community land to become a sustainable forest management site, in turn abolishing unsustainable logging practices in the area. Through this, the community has seen an increase in their medicinal plants and food sources such as prawns, edible ferns and more. Funds received from visitors and training events at the forest site have contributed to development in the village, such as improving the village hall.

In Drawa, the community is now trading carbon in the Voluntary Carbon Market and receiving payments for the conservation and protection of their forest. The community has also established a successful honey business after participating in an alternative livelihood awareness training.

Though these REDD+ community-based activities in Fiji came to a close in 2021, the LRD team will continue to support these local areas through providing technical advice and follow-up as needed.

Contributing to the SPC Key Focus Areas and UN Sustainable Development Goals

In 2021, LRD sought to further integrate its work into SPC's overall Key Focus Areas. The SPC Transition Plan 2021 has seven Key Focus Areas that fall under SPC's four main goals. LRD's mandate within SPC empowered it to contribute to all of the seven Key Focus Areas, aligned to the four SPC Goals which have been marked in bold below. SPC's seven Key Focus Areas are:

1. Resilience and Climate Action
2. Natural Resources and Biodiversity
3. Food Systems
4. Equity, Education, and Social Development
5. Sustainable Economies and Livelihoods
6. Planetary Health
7. Transforming Institutional Effectiveness

LRD's Contribution to Key Focus Areas by SPC Goal

Goal 1: Pacific people benefit from sustainable economic development

Key Focus Area 2: Natural Resources and Biodiversity

Key Focus Area 4: Equity, Education, and Social Development

Key Focus Area 5: Sustainable Economies and Livelihoods

Goal 2: Pacific communities are empowered and resilient

Key Focus Area 1: Resilience and Climate Action

Goal 3: Pacific people reach their potential and live long and healthy lives

Key Focus Area 3: Food Systems

Key Focus Area 6: Planetary Health

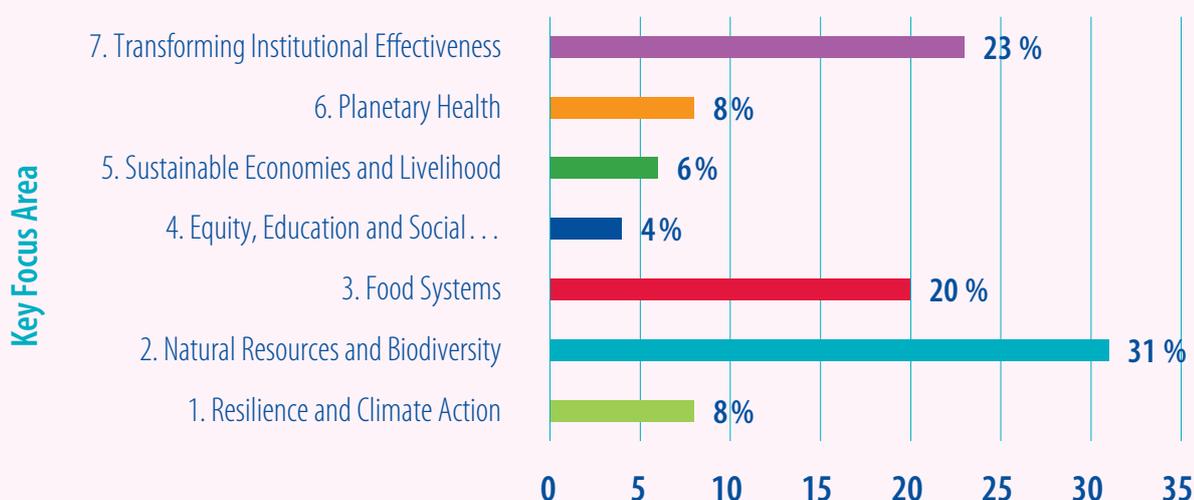


Goal 4: One SPC Delivering integrated programmes through streamlined services

Key Focus Area 7: Transforming Institutional Effectiveness

The LRD Business Plan 2019-2023 is aligned to the SPC Transition Plan 2021 and the new 10-year SPC Strategic Plan 2022-2031. An analysis and evaluation of work during the year indicated LRD achieved 51 major results during the year. Of the 7 SPC Key Focus Areas to which LRD contributed, 4 results were reflected under Key Focus Area 1 (Resilience and Climate Action); 14 results under Key Focus Area 2 (Natural Resources and Biodiversity); 12 results under Key Focus Area 3 (Food Systems); 2 results under Key Focus Area 4 (Equity, Education and Social Development); 3 results under Key Focus Area 5 (Sustainable Economies and Livelihoods); 4 results under Key Focus Area 6 (Planetary Health) and 12 results under Key Focus Area 7 (Transforming Institutional effectiveness). Contribution percentages are depicted in the graph below.

LRD's contribution to SPC Key Focus Areas

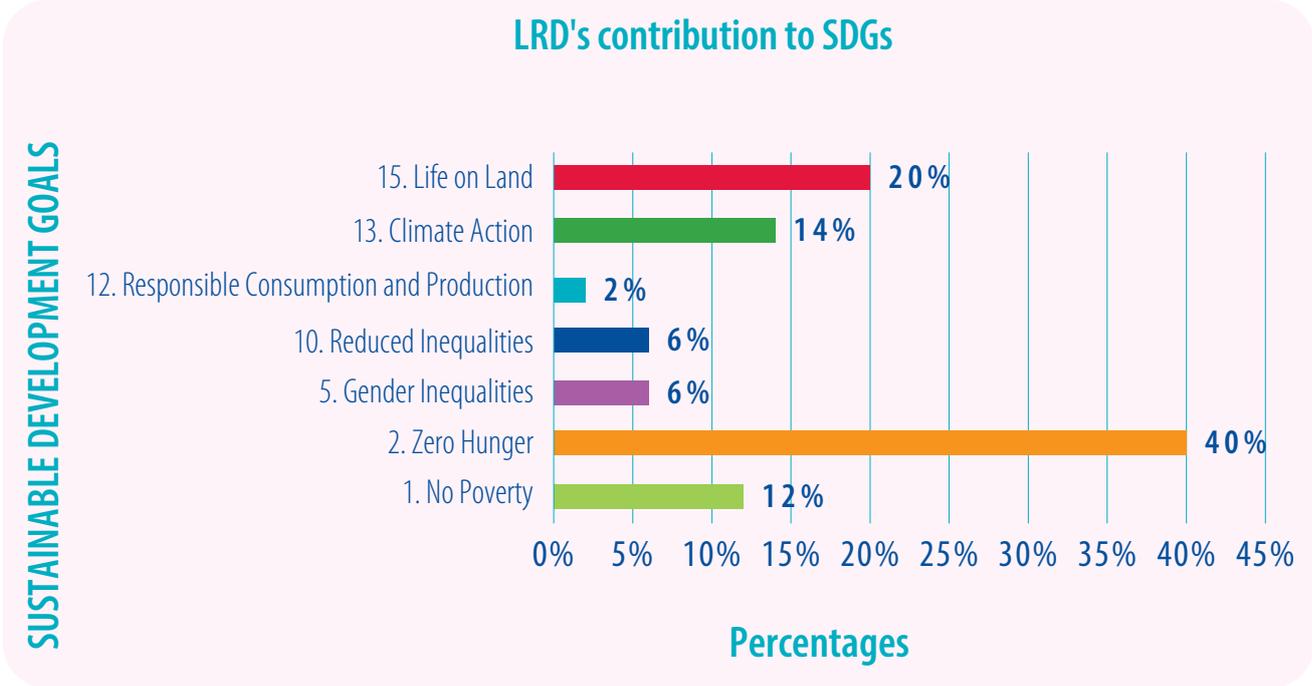


LRD continued to focus on contributing to the achievement of the UN Sustainable Development Goals in 2021. Contributions focused on No poverty, Zero hunger, Gender equality, Reduced inequalities, Life on land, and Responsible consumption and production. LRD also has a secondary contribution to other goals such as partnership for the goals, climate action, good health and well-being, responsible production and consumption and industry innovation and infrastructure.

LRD specifically contributed to the following goals in 2021:



The chart below breaks down the contribution of LRD's 51 results to the Sustainable Development Goals.



Partners and Resources

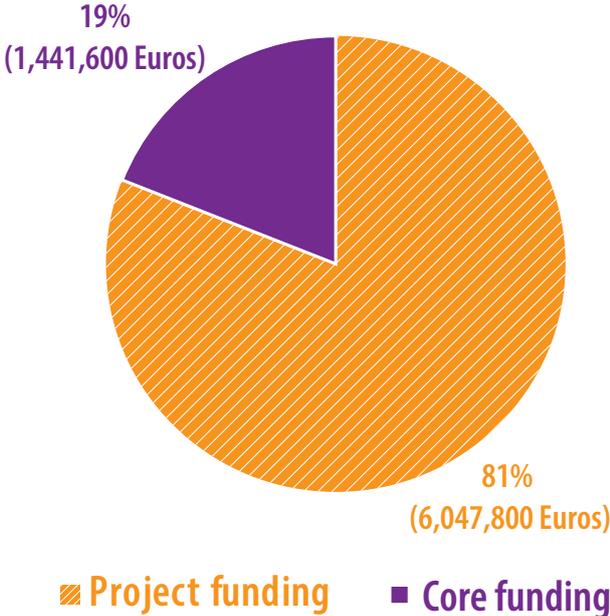
LRD sought to expand its programme and project base in 2021 while also ensuring that resources were better targeted and used more efficiently. Programmes and projects were centred on LRD's four main themes, or Pillars, that are cross-cutting and integrated. The four Pillars are:

- Genetic resources
- Sustainable forests and landscapes
- Sustainable agriculture
- Markets for livelihoods

These pillars are connected through five integrated programmes currently under development:

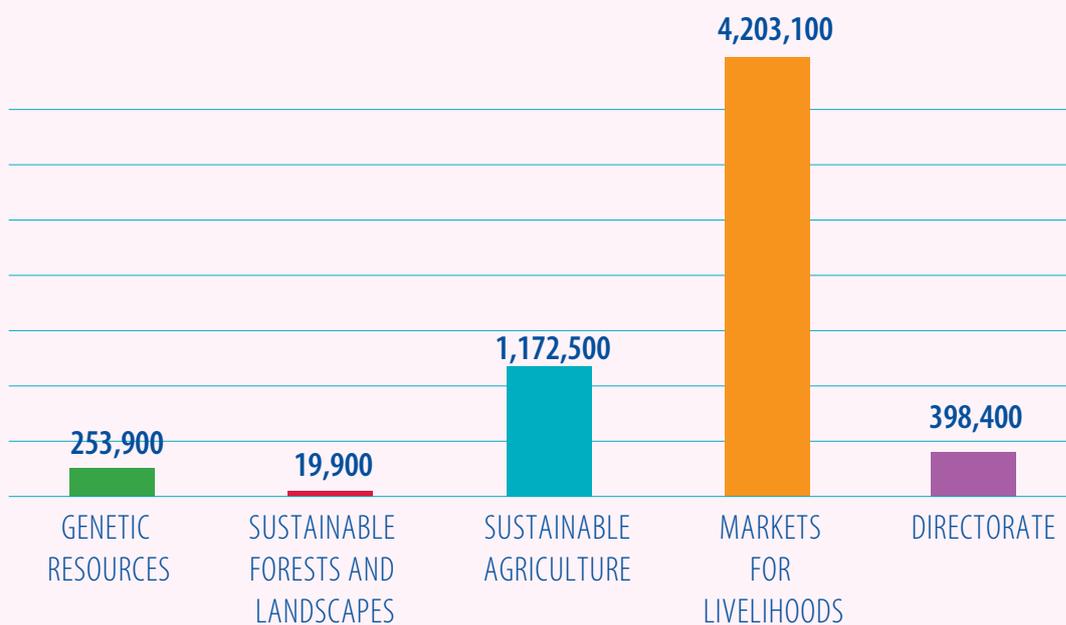
- Pacific Seeds for Life
- Healthy Ecosystems
- Sustainable Food Systems for Health and Nutrition
- Biosecurity and Safe Trade
- Coconut Integrated Programme

The four pillars benefited from a funding mix that is categorized into two primary components, unrestricted, or core funding, and restricted, or project funding, which is primarily used for projects. In 2021, project funding totalled 6,047,800 Euros, with core funding totalling 1,441,600 Euros. See the graph below.





Segmented by LRD theme, or Pillar, Markets for Livelihoods received Euro 4,203,100, followed by Sustainable Agriculture with Euro 1,172,500, the Directorate Team with Euro 398,400, Genetic resources with Euro 253,900 and Euro 19,900 for Sustainable Forestry and Landscapes. See the graph below.



Our funding and learning institution partners collaborated with LRD under the four main pillars to work toward the following outcomes.

- Increased availability of, and access to, traditional and improved crop and animal diversity (agrobiodiversity conserved, developed and promoted).
- Development and strengthening of protocols for effective provision of planting materials to national seed networks.
- Development of the Centre for Pacific Crops and Trees (CePaCT) as a Centre of Excellence.
- Further research with international partners – such as the French Agricultural Research Centre for International Development (CIRAD), International Atomic Energy Agency (IAEA), Consultative Group on International Agricultural Research (CGIAR), Australian Centre for International Agricultural Research (ACIAR) and national research centres – to build regional and national capacities in key areas, such as development of gene banks and nurseries, protocols for mass propagation, crop development, evaluation and selection, and pest and disease testing and elimination.
- Increased capacity for sustainable land management and sustainable forest management.
- Development and strengthening of national and regional capacity to mitigate and adapt to climate change impacts, and to respond to the effects of disasters on land, agriculture and forest resources.
- Increased capacities in implementing the concepts of the Voluntary Guidelines on the Responsible Governance of Tenure and participatory land-use planning and responding to members' requests for assistance in developing effective land-use policies and plans.
- Development, introduction and scale-up of agroforestry models in Micronesia and the smaller atolls in Melanesia and Polynesia to contribute to food and nutrition security, more efficient crop and livestock production, and promotion of markets for high-value tree products.
- Participatory development of agroforestry, crop and livestock productivity-enhancing technologies (development of crops resilient to salinity and climate change; adaptation and mitigation strategies; improved soil health, livestock and agroforestry systems; integrated crop management; and strengthening of extension, research and technology transfer).
- Enhanced divisional awareness and understanding of climate change and other key issues for agriculture and forestry.
- Improved dissemination and adoption of new agricultural production technologies.
- Strengthened division capacity to make evidence-based policy decisions on food security, sustainable resource management and economic growth.
- Increased capacity of PICTs to meet international standards, guidelines and conditions for export and domestic trade, and improved information on plant and animal health status.
- Enhanced smallholder (including women and youth) participation in local, domestic and international markets: sustainable and viable post-harvest technologies developed and promoted; increased production and consumption of local nutritious foods; sustainable, productivity-enhancing technologies for livestock; and participatory practices developed and promoted.
- Development of protocols to enable farming families to establish sustainable food crops (in terms of quantity and quality); assistance for member countries to build social capital in food production, marketing and business ethics; and promotion of participatory guarantee systems and clusters.
- Leadership of a youth employment/'agri-preneur' programme, with a focus on equitable access to existing resources and employment opportunities for youth, women and minorities.



LOOKING AHEAD TO 2022

While the cautious optimism at the start of 2021 was quelled by new COVID-19 waves and variants in the Pacific, synergistic management and strong vaccination rates toward the end of the year are again producing hope that the new year will be marked by progress that can be defined as 'post-COVID'. Signs are already encouraging: Pacific economies began opening again in the first weeks of 2022 and in-person visits to communities are being planned.

Though LRD will no doubt still continue its successful online efforts, the opening of countries will also put staff back on the ground in the communities where vital face-to-face cooperation will open up programmes and projects to new avenues of success. The LRD team is in particular excited to host esteemed agriculture and forestry experts from the entire region in-person at its home country of Fiji for the 8th Regional Meeting of the Pacific Heads of Agriculture and Forestry, which will also take place during the Pacific Week of Agriculture. Seeing old friends and partners for the first time in more than two years will no doubt spur innovation.

LRD is also looking forward to being on the ground and face-to-face with communities in 2022, taking larger steps forward in a number of projects and technologies. Follow-up on food cube technology will be notable during the year, with the advances feeding into LRD's overall food security efforts. Food systems will be a priority, with LRD focusing on a dedicated food systems programme and team that will drive this work with partners throughout the Pacific.

Other foods and agricultural products will also be important. LRD will strengthen regional engagement on its coconut initiative, in part by publishing an extensive coconut risk manual for guidance in the first quarter of the year. LRD is also preparing to publish another important manual on plant health in 2022. Seed systems, another vital foundation of food security, will also be in focus, with a follow-up on the seed systems forum held in 2021 and further work on seed system planning and modeling. LRD's soil work will also continue, with planned training on soil testing protocols promoted to five countries in 2022: Vanuatu, Fiji, Tuvalu, Kiribati and Tonga.

The long lifespan of COVID-19 in the region has also highlighted issues that are particularly important for thriving agricultural trade and crop health, including biosecurity and pests and diseases. These issues will come into focus during the year through a number of initiatives including strengthening PHOVAPS (Pacific Heads of Veterinary and Animal Production Services) and promoting the regional animal health framework.

Research will be key to building the future of agriculture and trade in the region, and LRD will collaborate with its partners to step forward with a proposed Regional Research Agenda. The Agenda platform will be built for approval by the Pacific Heads of Agriculture and Forestry during their meeting in September.

Throughout the year, LRD will strengthen its gender and underserved communities work, and is looking forward to hosting women and youth focused workshops, in addition to increasing integration of women and youth into all other meetings and programme and project work.

Though the 2021 goal to "build back better" after COVID-19 had to be adapted in the face of continuing COVID challenges, the LRD team continued to look forward. In 2022, with the Pacific finally reawakening after the pandemic, opportunities to build back better are boundless.