Australian Government

Department of Education

Final Report

Developing Critical Agriculture Skills Courses in India (DCASCI)

This project is funded by the Australian Government Department of Education through the International Education Innovation Fund

THE UNIVERSITY *of* ADELAIDE

Skills Impact

ASCI
Agriculture Skill Council of India

NSFI
Driving Change, Delivering Impact

Australian Government

Department of Education

Project Partners

Core Partners

University of Adelaide, Australia
Skills Insight, Australia
Maneeraj Education
National Skills Foundation of India (NSFI)
Agriculture Skill Council of India (ASCI)

Australian Registered Training Organizations (RTOs)

Ironwood Institute, Australia
Australian College of Agriculture & Horticulture (ACAH), Australia
Aventia Institute, Australia
Carbon Friendly, Australia

Indian Training Partners

Indian Council of Agriculture Research (ICAR)
Mahindra & Mahindra
Agha Khan Rural Support Programme, India
Centre for Sustainable Agriculture

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Acronyms

ACIAR	Australian Centre for International Agricultural Research
AHC	Agriculture, Amenity Horticulture and Conservation and Land Management
AI	Artificial Intelligence
AISC	The Australian Industry and Skills Committee
AQF	Australian Qualifications Framework
ASCI	Agriculture Skill Council of India
ASQA	Australian Skills Quality Authority
ATARI	Agricultural Technology Application Research Institutes
B2B	Business to business
CA	Conservation Agriculture
CSR	Corporate Social Responsibility
DCASCI	Developing Critical Agricultural Skills Courses in India
DoE	Department of Education
DEWR	Department of Employment and Workplace Relations
FPO	Farmer Producer Organisation
FTC	Farmers Training Centre
F2F	Face to Face
GoI	Government of India
ICAR	Indian Council of Agricultural Research
IoT	Internet of Things
IRRI	International Rice Research Institute
JSC	Jobs and Skills Council
KVK	Krishi Vigyan Kendra
MSDE	Ministry of Skills Development and Entrepreneurship
NCERT	National Council for Education Research and Training
NCVET	National Council of Vocational Education and Training
NEP	National Education Policy

NGO	Non-Government Organisation
NOS	National Occupational Standards
NSDC	National Skill Development Corporation
NSFI	National Skills Foundation of India
NSQF	National Skills Qualifications Framework
QP	Qualification Pack
RCC	Recognition of Current Competency
RPL	Recognition of Prior Learning
RTO	Registered Training Organisation
SI	Skills Impact
SSO	Skills Insight Organisations
STA	Skills Training Australia
STP	Standards for Training Packages
TAFE	Technical and Further Education
ToT	Training of Trainers
TVET	Technical Vocational Education and Training
TP	Training Partner
UG	Undergraduate
UoA	University of Adelaide
UoC	Units of Competency
VET	Vocational Education and Training
VoC	Vocational

Executive Summary

Key outcomes

1

A demand-driven set of future skills in Indian agriculture that are approved by the national regulator, aligned with existing programs and embedded in effective institutions.

2

Strong connections between Australian and Indian actors across the agriculture VET system.

3

A cohort of training providers from India and Australia who can deliver quality training to a wider stakeholder network.

4

A demonstrated, partnership-based process for engaging the Australian and Indian VET agricultural skills sectors to work together, that can be applied to other sectors.

Highlights

1

High level of team collaboration, with strengthened professional linkages between Indian and Australian actors in the VET system.

2

Significant level of consultation across the Indian agricultural sector and value chain stakeholders to define five new critical skills areas including Digital Agriculture Extension Promoter, Carbon Farming Practitioner, Livestock Green Management Promoter, Integrated Farming Practitioner and Organic Farm and Business Promoter.

3

Comprehensive assessment of the processes and approaches used for Standards and Course development in the two countries, including 25 new standards approved by the NCVET in India.

4

Co-development and delivery of five critical skills courses by Indian and Australian Training Organisation. The partners selected in India offer huge potential to embed these courses and learning within their extensive networks.

Background

Funded by the Australian Government's Department of Education, the University of Adelaide led Developing Critical Agricultural Skills Courses in India (DCASCI) project brought together a team of highly skilled agricultural education and research professionals from both Australia and India. Core partners include Skills Insight (Australia), the Agricultural Skill Council of India (ASCI) and the National Skills Foundation of India (NSFI). Additional training partners were brought in in the second half of the project to co-develop content and co-deliver pilot training, making twelve partners in total from India and Australia. The project aimed to strengthen the bilateral relationships between Australia and India through the delivery of pilot training products, in partnership with stakeholders from the Australian and Indian education and agriculture sectors.

The project identified critical and emerging jobs that require advanced agriculture practices across key subsectors to support India's transformation agenda for the agriculture sector, codified them in occupational standards, and developed and delivered the training needed to support these new roles.

The project represented an opportunity to establish strong connections between India and Australia's vocational training sectors. This was achieved through exploring all levels of the agricultural Vocational Education and Training (VET) system in each country by initiating a series of pilot vocational training short courses that focused on critical areas of the agriculture sector. The courses are based on Australia's quality, regulated skills qualifications and address India's emerging agricultural skills needs. The project provided an opportunity for Australian education providers to partner with Indian counterparts in the development and delivery of the pilot courses. Australian educational providers are now better able to understand the specific skills gaps and in turn the training and educational opportunities in India.

Approach taken

The project took a phased approach to delivery, including planning, development, delivery and evaluation. A comprehensive assessment was undertaken to determine the priority for specific skills that are needed in the Indian agriculture sector. This was based on the emerging trends and technological opportunities that were on the horizon for the agricultural sector and which would require specific skill sets. The engagement of Australian expertise in this project provided access to a set of unique skills and expertise that aimed to share Australia's competitive advantage in the VET sector. The identified skill areas were (1) Digital Agriculture Extension Promoter; (2) Carbon Farming Practitioner; (3) Livestock Green Management Promoter; (4) Integrated Farming Practitioner and (5) Organic Farm and Business Promoter.

Each skill area became a separate work package that engaged pairs of Training Partners from India and Australia and was implemented in a range of target locations. The pilot training programs engaged with local networks to identify relevant stakeholders who could both inform and benefit from the training course to ensure that it was tailored to local conditions. Throughout the pilot course delivery activities, our team communicated with local networks including government agencies and programs to promote the aims, outcomes and benefits for their local area; aligning with local programs can help embed the pilots in ongoing, enduring and sustainable programs. Ultimately, the pilot courses helped to inform a recommended process for engagement that can be applied more widely to connect the Indian and Australian VET systems.

Demonstrating a successful model for a Partnership-based Approach to Critical Skills Development

The initial success in the implementation of this project demonstrates the relevance of the model

and applies to the Indian agricultural skills sector. The exercises undertaken through this project did identify several additional process steps that improved the implementation of the model. Adapting the strategies and methodologies implemented in this project can address skills gaps and improve training outcomes across various domains. Key elements of the process include:

1. The need to engage the key actors at various levels within the specific VET sector in the project to enable institutional learning to be applied, rather than just documented.

2. The importance of working "side by side" in the mapping comparison and adaptation process between the two countries, to help understand the differences in the systems and nomenclature.

3. The provision of adequate time to enable connections to be made and relationships strengthened. Co-development of desired outputs is a time-consuming process, particularly when there is also an element of learning involved.

4. Consider the points at which to intervene in the system given limited budget allocation but strong partnerships to leverage.

Opportunities

There are a significant number of opportunities identified that can build on the work undertaken in this project. There are both country-specific (for India and Australia) and collaborative opportunities (engaging both India and Australia). These relate to a range of outcomes including:

Dual certification: Partnerships - continue relationship between ASCI and Skills Insight; Jointly develop Training of Trainer process taking the best elements from both systems, that can be shared between Australia and India; Joint competency/qualification recognition (Australian

and Indian) for delivery of training taking place in India that could focus on priority areas aligned to the needs of both India and Australia where there is a common cross-over, such as biosecurity and quarantine standards, OHS&W, personal safety, and specific technical skills training; and Development of specific skills assessment methodologies and criteria for students.

Scaling and development: Connect to Indian Council of Agricultural Research (ICAR) State Agriculture Universities (SAU) network – skills courses as additional credits for under graduate students; Connect to ICAR Krishi Vigyan Kendra (KVK) network – skills courses delivered at KVK level; Embed within additional Industry and Development networks.

Business opportunities: Linking agricultural technology and innovation products and services to training opportunities.

Research: Research opportunities for both VET sector and Agriculture; Linking to Australian Centre for International Agricultural Research (ACIAR) projects.

Conclusion

The most significant achievement from the project is that with some minor modifications, the Partnership-based Model for Critical Skills Development serves as a highly successful model for bi-lateral engagement in the VET sector. The project outcomes were more than satisfied through the outstanding success of this project. Impacts from the project have been significant, in terms of identifying future opportunities for both India and Australia through a range of initiatives that can be explored on a country-by-country basis and importantly for future joint collaborative opportunities. The project has successfully established lasting relationships between all partners, which will positively strengthen international collaboration in the VET skills development and delivery areas.
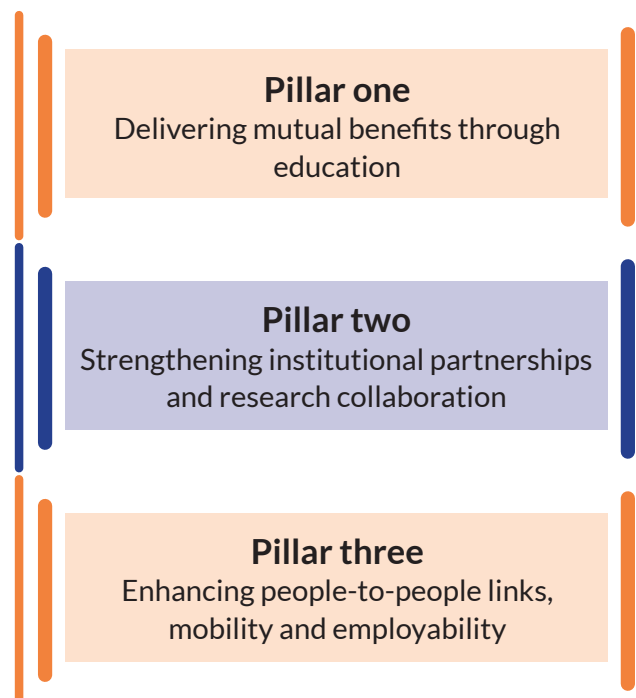
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Background

1.1 Context

The Indian National Education Policy 2020 (NEP) heralds the potentially explosive growth of vocational education in India. To prepare for this, the NEP requires all educational institutions to integrate vocational education into their offerings. The NEP prioritises vocational education and the capacity development of teachers to boost the employability and vocational skills of learners at all levels. The quality of VET is to be enhanced by identifying, designing and developing vocational courses that meet common norms and skills standards identified at the national level.

Vocational courses will need to be accredited and providers will need to be registered to further enhance the quality and sustainability of VET programs; this should include the process of selecting and recruiting teachers, selecting students, course delivery, assessments, and awarding of qualifications to students. Administering and managing the VET system as a whole, and providing student support services, will require a strong system of capacity development of the stakeholders at all levels (i.e. national, state, district and institutional). Best practices in VET, under criteria that can be replicated in separate institutions in the relevant sectors, will need to be identified. These can be shared at all levels to compel effectiveness in pedagogical and other aspects of the implementation of VET.

The Australian Government supports India's education reform agenda through its NEP. The Australian Strategy for International Education 2021-2030, aims to work with industry priorities to deliver job-ready graduates in disciplines and regions where they are most needed, including anticipating future skills demands. A Partnership for the Future: Australia's Education Strategy for India (the Strategy) acknowledges the transformative potential of India's education reform agenda. The Strategy's vision is for a prosperous future for both nations through

collaboration between Australian and Indian education providers. The current Developing Critical Agricultural Skills Courses in India (DCASCI) project described in this report aligns with the three pillars that underpin this strategy, these being;

Pillar one
Delivering mutual benefits through education

Pillar two
Strengthening institutional partnerships and research collaboration

Pillar three
Enhancing people-to-people links, mobility and employability

This project is an opportunity to boost Australia's presence in transnational education and training in India, by leveraging existing connections in both agriculture and education.

India's overarching agricultural development strategy aims to improve the incomes of smallholder farmers, drive diversification, and achieve sustainable resource use. Agriculture employs 41% of India's population and contributes 16% to India's GDP (World Bank, 2019). The income gap between those in farming versus non-farmers has increased rapidly in India in the past few decades, and current agricultural systems are not able to gainfully employ the rapidly growing numbers of working-age people. Organisations across India are looking for

ways to increase farmers' income and on-farm employment opportunities, in particular for women and youth.

The key strategy for India that guides agricultural development and research is the policy of Doubling Farmers' Income. Members of NITI Aayog have repeatedly articulated the need for transformational change in food systems to meet the challenges of sustainable food and nutrition security, adaptation and mitigation of climate change, and sustainable use of critical resources such as water, energy, and land. A new vision for agriculture is required, with a focus on production efficiency and jobs generation, climate change adaptation and sustainability. Suitable policy interventions, regulations and reforms are needed to support the new vision, including in skills to support a shift in emphasis from input-intensive to knowledge-intensive systems.

Australia has an advanced agricultural system and a highly skilled agricultural workforce, and these experiences can be shared for very practical outcomes. Despite agricultural systems being different in the two countries, Australia and India face common challenges in terms of production environments and skills shortages, for which collaboration can provide mutual benefits.

1.2 Overview of project

The project aim was to identify critical and emerging jobs that require advanced agriculture practices across key subsectors to support India's transformation agenda for the agriculture sector, codify them in occupational standards, and develop and deliver the training needed to support these new roles.

Key outcomes of this project include:

1 A demand-driven set of future skills in Indian agriculture that are aligned with existing programs and embedded in effective institutions.

2 Enhanced connections between Australian and Indian actors in the agriculture VET system.

3 Cohort of training providers from India and Australia who can deliver quality training to a wider stakeholder network.

4 A demonstrated, partnership-based process for engaging the Australian and Indian VET agricultural skills sectors to work together, that can be applied to other sectors.
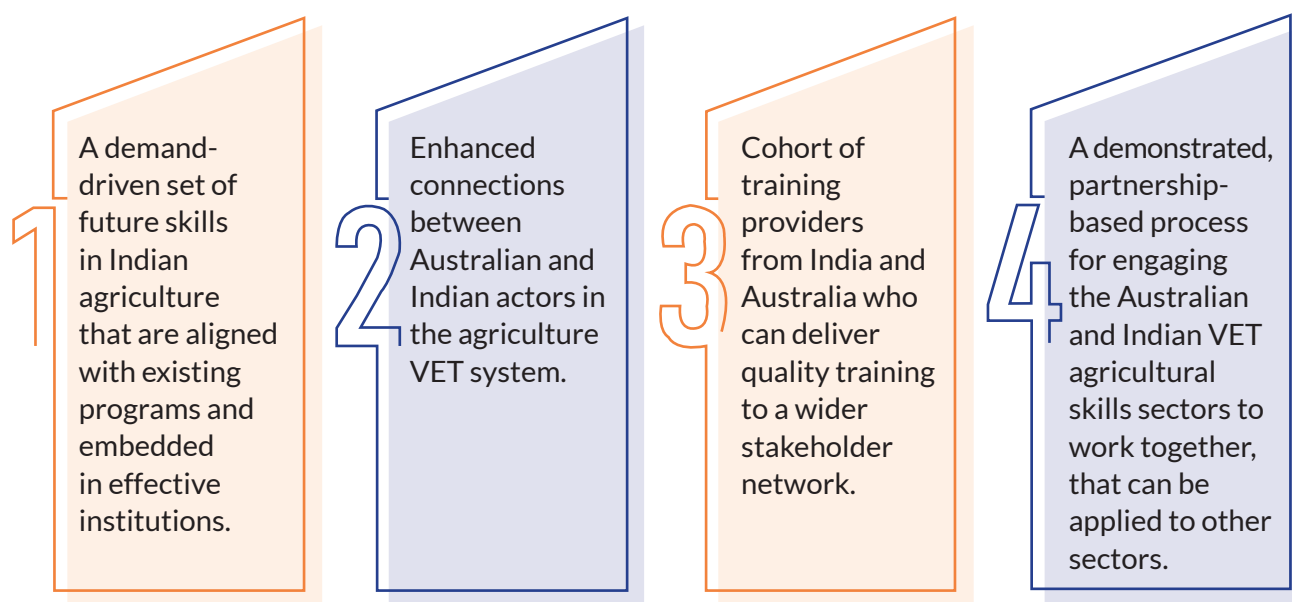
The project has taken a phased approach to delivery, including planning, development, delivery and evaluation (Figure 1). We first undertook a comprehensive assessment to determine the priority for specific skills that are needed in the Indian agriculture sector. For each priority skill, our team co-developed standards and training content and conducted pilot training courses.

Figure 1 Project Plan showing the phased approach used to deliver intended outcomes.

Phase	Stage	Activities	Partners
Planning	Planning	◄ Project Plan ◄ Steering Committee ◄ Stakeholder identification	Project Team
	Scoping Study	◄ Identifying skills gaps and emerging trends ◄ Stakeholder consultations ◄ Identify pilot locations	JayCummins, ASCI, NSFI, Skills Insight
Development	Standards	◄ Develop occupational standards ◄ Validate and map occupational standards ◄ Endorsement	ASCI, Skills Insight
	Product Development	◄ Develop tailored currculam and training products Australian providers undertake TOT for curriculum writing	UoA, NSFI, Australian & Indian Training Partners
Delivery	Teacher Training	◄ Deliver in person TOT for specific skills ◄ Study tour to Australia for Indian stakeholders	UoA, NSFI, Australian & Indian RTOs
	Piot	◄ Pilot delivery of training products in targeted locations	UoA, ASCI, NSFI, Australian & Indian RTOs, Agriculture Sector Partners
Evaluation	Evaluation	◄ Evaluation workshop ◄ Final report	UoA, Jay Cummins, NSFI

Each skill area became a separate work package that engaged pairs of Training Partners from India and Australia and was implem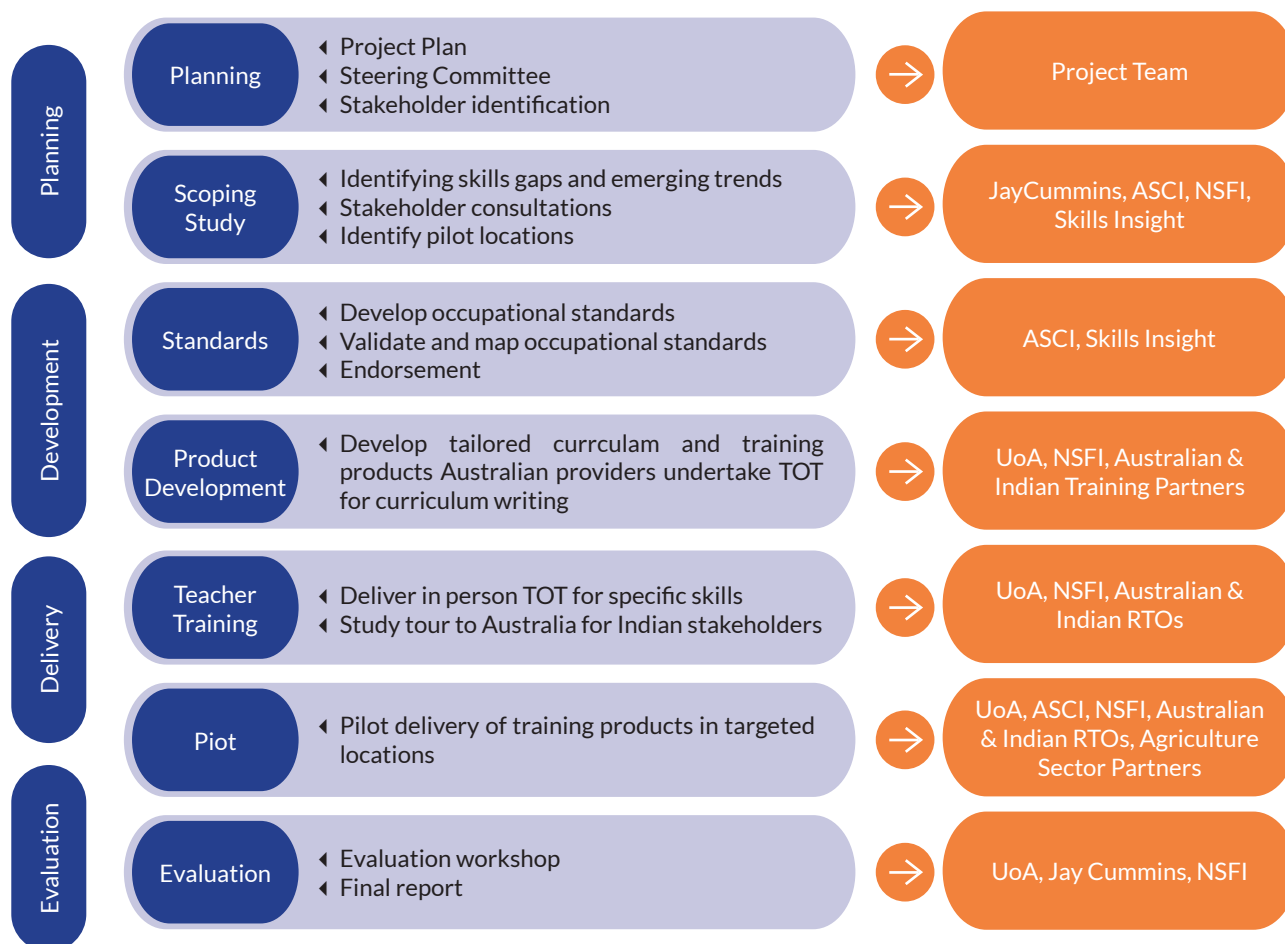ented in a range of target locations (Figure 2). The pilot training programs engaged with local networks to identify relevant stakeholders who could both inform and benefit from the training course to ensure that it was tailored to local conditions. Throughout the pilot course delivery activities, our team communicated with local networks including government agencies and programs to promote the aims, outcomes and benefits for their local area; aligning with local country/ regional programs can help embed the pilots in ongoing, enduring and sustainable programs. Ultimately, content development and delivery of the pilot courses helped to inform a recommended process for engagement that can be applied more widely to connect the Indian and Australian VET systems.

The activities associated with this project (including the scoping exercise, and delivery of the pilot training) have helped assist Australian educational providers to better understand the specific skills gaps and in turn, the training and

educational opportunities for the Indian agricultural sectors. Over time such training can be aligned to better address the needs and opportunities of the Indian marketplace.

Figure 2 Each skill area became a pilot project following the same approach and implemented in a range of locations.

2

Partner Engagement

The project team was established in two phases; core DCASCI project team members who were part of the initial consortium, and then a group of training organisations from India and Australia. The core team undertook the responsibility to identify and contract suitable partners who would prepare and deliver the pilot training courses. The Scoping Study identified the key skills and the focus of the pilot training programs that would be delivered through this project. For each priority skill, potential training partners in both Australia and India were identified.

Further to this other industry stakeholders (who could potentially contribute to the co-development of standards and training content and support the pilot training courses) were identified. As a result, there was a combination of training partners and industry-based organisations identified that were considered worthy (and willing) to support the delivery of the pilot training courses.

2.1 Core partners

This project used a consortium approach to bring together organisations with a wide range of skills required across the international education and agriculture sectors. The core project team worked together from the start of the project, with members from the University of Adelaide (UoA), Skills Insight (SI), Maneeraj Education (ME), National Skills Foundation of India (NSFI) and the Agriculture Skills Council of India (ASCI). The team provided complementary skills and networks in vocational education and agriculture in both India and Australia. This provided the perfect launchpad for identifying and engaging with a broad and diverse range of stakeholders in the two countries. The team's significant experience operating in agricultural research for the development sector in India, (including delivering training for extension agents, rural service providers and farmers) proved to be an invaluable asset.

The University of Adelaide, as the commissioned organisation in Australia, connected Australian expertise and networks with Indian counterparts and facilitated the co-development of tailored curriculum and training products. Core team members comprised Dr Tamara Jackson, Dr Kuhu Chatterjee and Dr Jay Cummins. The School of Agriculture, Food and Wine Science having the largest concentration of agricultural research and teaching expertise in the Southern Hemisphere provided the necessary systems to ensure that the project was efficiently managed and supported throughout the design and implementation phases.

Skills Insight's core skills were their ability to benchmark learning and skills standards for Australian agricultural industries. Their ability to focus on reviewing and developing vocational units of competency, skill sets, and qualifications

to meet Australian industry skills requirements proved to be a valuable asset throughout the project implementation. Their experiences and approaches to working directly with industry and government, to "ask the right questions", develop systems and document skills and opportunities (and challenges) helped to underpin methodologies integrated into this project. The net result was to help guide the development of nationally consistent skills standards and courses able to be flexibly delivered to meet local industry needs.

Maneeraj Education represented by Director Dr Shweta Singh provided valued experience in the development of the pilot training course curriculum according to the specific NOS standard requirements. With significant experience in the VET sector, Dr Singh provided guidance and support to the contracted training partners and industry organisations throughout the development and delivery phases of the project, in addition to supporting overall project implementation.

The Agriculture Skill Council of India (ASCI) is the designated organisation for the Government of India to deliver skills and VET training across India, including developing skills standards, course curriculum, training material and promotion of agri-vocational skills through various government schemes and institutions of Union and State Governments of India. An industry-driven body, it was set up under the aegis of the National Skills Development Corporation (NSDC) to work towards building the capacity of the agriculture industry and bridge the gap between laboratories and farms. ASCI caters to the following stakeholders of the agriculture industry: farmers, farm and wage workers, self-employed, extension workers, agriculture industries, women workforce, and agri-entrepreneurs. It targets the upgrading of skills in a range of sectors including farm inputs, procurement, supply chain, agri-warehousing, and logistics.

The National Skills Foundation of India (NSFI), with its long-term vision for Indian agriculture, stepped in to form a sector skill council (ASCI) in partnership with the Federation of Indian Chambers of Commerce and Industry (FICCI) and with the support of NSDC. While ASCI has emerged as a national body working towards building capacity in the agriculture industry, NSFI is not-for-profit and aims to build livelihoods sustainably through large-scale development interventions. It offers research-based policy advocacy, conducts skill development programmes, encourages entrepreneurship, aids in project implementation through market-based models, and acts as an incubator for organisations and people.

NSFI has partners and alliances with relevant ministries, government departments, universities, private sector entities, multilateral agencies and statutory bodies. NSFI is the author of Volume 9 of the Doubling of Farmers' Income Report Dalwai Committee (Government of India) and has been developing course curriculum and content for training for various programmes in partnership with the International Finance Corporation (a division of the World Bank). Since 2018, NSFI has played a pivotal role in developing Participatory Training Content for Farmer Producer Organisations which is used widely as resource material for various Training of Trainer and Board of Director Training Programme in the country.

The project procured the services of additional partners at different stages of the project (for example, see Figure 1 and Figure 2). These partners were identified following the Scoping Study that shortlisted the five priority skills, to leverage the networks of existing project partners. For example, ASCI in India and Skills Insight in Australia, have connections to all agricultural Training Partners in their respective countries and could identify the most suitable organisations.

2.2 Australian Registered Training Organisation (RTO) engagement

The engagement of training organisations from Australia to prepare and deliver agricultural VET courses in India was sought between August and December 2023. Four registered training organisations (Training Partners) were identified and contracted as project delivery partners, each working alongside Indian counterparts. The RTOs were given the responsibility to design and write course curricula based on the specific NOS requirements, guided by the National Skills Qualification Framework (NSQF) levels suited to the Indian context.

The objectives of the exercise were to (1) identify and partner with reputable training organisations with experience in agricultural training packages; (2) collaboratively develop VET courses tailored to local agricultural practices for India; and (3) build bilateral relationships between Australian and Indian training organisations. The anticipated outcomes included (1) enhanced agricultural vocational education expertise; (2) co-development of agricultural courses between Australian and Indian partners and (3) the co-facilitation of pilot course delivery in India.

2.2.1 Overview of the selection process

A set of selection requirements as determined by the project team helped guide the appointment process for the Training Partners. An EOI form (together with supporting Q and As) for distribution to prospective Training Partners was developed to help gauge interest from potential partners who were capable of satisfying the guiding selection criteria. Selection criteria included organisational reputation, experience in agricultural vocational training, and willingness to deliver in India. A range of Training Partners from the public and private sectors were targeted, utilising the project team's extensive network of educational providers across Australia. The opportunity was promoted through social media and personal approaches. Several attempts were made to attract Training Partners from TAFE and dual-sector Universities without success. The reluctance for these organisations to become engaged in the project was related to the short lead time, limited personnel resources (and commitments to existing training delivery).

Three private Training Partners and one industry partner were identified. Once appointed, Training Partners were initially engaged via email, phone and online meetings. Training Partners were briefed through these meetings and were provided with a comprehensive information packet detailing the project's goals, expectations and deliverables. To foster strong partnerships an induction workshop was held face-to-face at the University of Adelaide in November 2023. The induction workshop content included a project overview and goals, expected outcomes and clarification of roles and responsibilities. The workshop concluded with agreements relating to the Memoranda of Understanding (MOUs) and contracts with each of the participating organisations.

2.2.2 Australian Training Partners

1. The **Australian College of Agriculture & Horticulture (ACAH)** is a highly recognised institution that offers a range of courses in agriculture, horticulture, livestock and related fields. They provide quality education and training to students aspiring to build careers in agriculture, sustainable farming practices, horticulture, landscaping, and similar areas. ACAH aims to equip students with practical skills and knowledge to succeed in the agricultural and horticultural industries.

2. **Ironwood Institute** is a VET institute based in Adelaide, South Australia. They offer a variety of courses and programs in areas such as horticulture, agricultural business, management, leadership, and more.

Ironwood Institute offers pathways for students wishing to undertake post-graduate studies at the University of Adelaide, Torrens University and others. Based in Adelaide, South Australia, Ironwood Institute is known for providing quality education and training to equip students with the skills and knowledge needed for their chosen career paths.

3. **Aventia Institute** is an RTO based in Brisbane, Queensland. They offer a range of VET courses and provide nationally recognised qualifications in areas such as business, management, community services and agriculture. Aventia Institute focuses on delivering practical and hands-on training to prepare students for the workforce.

4. **Carbon Friendly Australia** is a non-profit organization dedicated to promoting environmentally friendly practices designed to help reduce carbon emissions. As an industry partner, they work towards raising awareness, implementing sustainable solutions, and advocating for policies that protect the environment

2.3 Indian Training Partner engagement

The engagement of training organisations from India to co-develop and deliver agricultural VET courses in India was undertaken between August and December 2023. The Indian Training Partners were selected for their strong reputation and significant footprint in the Indian VET sector, to enable high quality work to be undertaken and to embed the project outputs into the wider system for sustainability.

During the project inception phase, it was decided that the content development and pilot training partners would be identified only after the finalisation of the critical skill courses. This approach was to enable "best practice" delivery of the project outcomes based on the expertise and meeting project objectives.

As a part of the scoping study during the deliberations among the project partners, various criteria were used to identify the skill gaps (Refer to Section 3.9 of the Scoping Study Report). Out of the nine criteria used for identifying the critical skills to be taken up under the project, four were used as qualification criteria for the identification of Indian Training Partners for participation in the project. This specific criterion is summarised;

1. To be able to contribute to the transformation or advances in Indian agriculture.

2. Have the ability to align the courses with the priorities and policies of the Indian Government.

3. To have a prior experience or disposition to engage with Australian agencies during the project and in the future / on an ongoing basis.

4. To be open and have the ability to actively engage with the private sector agribusiness network.

2.3.1 Overview of the selection process

Keeping in view the quantum of work to be delivered and timelines to be met, NSFI reached out to the market for potential partnerships

through ASCI and NSFI networks as against the adoption of a national procurement process. More than 7 agencies in each of the courses were listed and evaluated by the project team to shortlist and reach out. Upon the evaluation, Expression of Interest was sought and the same was deliberated with the core partners of the project for finalisation.

The four criteria used for shortlisting the Training Partners were paradoxically enablers and also limiting factors in the process of onboarding and engagement during the project. The competencies of being able to 'contribute to the transformation' and 'align with national priorities and policies' are in a way conjoined with the rigorous processes at respective organisations for onboarding. In two of the four Training Partner cases, the partnership called for deliberations and confirmations at multiple levels. This was challenging given the tight timeline of completing both content development and course piloting during the project period including the multiple iterations and collaborative discussions between, Australia and India partners.

Additionally, engagement of the project partner staff in the project deliverables as against their other commitments (especially in the context of zero lead time to schedule their prior commitments) and various national priorities (in the form of activities induced by Indian General Elections) have challenged the project partners in offering requisite time for the deliverables. The unavailability of experts with niche skills (given the futuristic nature of courses taken up under the project) further has challenged the NSFI team in engaging with Indian Training Partners to support them with complementary resources, towards timely deliverable fulfilment.

2.3.2 Indian Training Partners

Training Partners engaged as project partners are described as follows:

Indian Council of Agricultural Research (ICAR): The Council under the Ministry of Agriculture and Farmers' Welfare is the apex body for co-ordinating, guiding and managing research and education in agriculture including horticulture, fisheries, and animal sciences in the entire country. ICAR through its ATARI Zone X (https://atari-hyderabad.icar.gov.in/atarihyderabad/) has proven expertise over 2 decades in digital agriculture practice, has the highest potential of transforming Indian Agriculture through the course and scaling it up with new heights. ICAR has already integrated the course into its annual action plan of strengthening its extension staff across the nation in the domain of digital agriculture. With a focus on contributing to India's commitment to reducing GHGs, ICAR is promoting the Livestock Green Management Promoter course among its KVK network.

Mahindra and Mahindra: The Mahindra Company was established in 1945 first focusing on steel trading and later moving into automotive including farm equipment and tractors. The company has an annual turnover of $21 billion USD and employs more than 260,000 people. The Mahindra Farm Equipment Sector brings a wide range of progressive farm machinery to Indian farmers to help them deal with labour shortages, increase efficiencies, reduce cost of farm operations, and increase crop yields. They design, develop and manufacture farm equipment at world class research and development centres and manufacturing plants. They also collaborate with the best in India and internationally to bring advanced agricultural technology to Indian farmers. Their extensive Training and Skill Development program builds capacity to support the use of modern agricultural equipment for farmers.

Centre for Sustainable Agriculture (CSA): CSA (https://www.csa-india.org/) with over 2 decades of experience in leading organic movement and having hands-on experience of driving not only the production segment of the value chain, but also certification, sales, and collectivisation, suits best for the course/job role of the Organic Farm and Business Promoter. CSA advises/consults various government initiatives on organic agriculture and is poised to take up skill development programs for various government and non-government extension functionaries on an ongoing basis.

Aga Khan Rural Support Programme (AKRSP): AKRSP (https://www.akrspindia.org.in/web/home) over a decade has been a Pioneer in regenerative agriculture practice promotion among producers in India across locations/geographies. It has built a strong network of stakeholders and is partnering with national and international agencies in promoting Carbon Farming and taking the benefits of Carbon Credits to the farming community. In collaboration with its network partners, AKRSP is taking up the course to scale.

National Skills Foundation of India (NSFI): NSFI (www.nsfindia.org) with its expertise and focus on practising 'Farming as a Business' authored Volume 9 of India's Doubling of Farmers' Income Report (by Ashok Dalwai Committee, GoI). NSFI is working towards increasing household income through various secondary income opportunities in rural India. NSFI with its partner network is promoting Integrated Farming Course to not only enhance income in rural India but also towards resource use efficiency in changing climatic conditions.

Project Partners ASCI, ICAR, CSA, AKRSP, NSFI are articulating pathways to develop a cadre of trainers for skill development in various project courses through collaborative efforts (though beyond the project period) and intend to continue the efforts for accelerated impact through synergies.

3

Approach taken

3.1 Scoping study

The scoping study report provided the foundation for the DCASCI project by providing a detailed analysis of the current challenges and opportunities associated with the Indian agricultural sector, whilst identifying a range of specific gaps related to the provision of skills training. The scoping study set out to identify skill sets that could contribute to the future prosperity and competitive nature of the Indian agricultural sector, based on the ability to further enhance the productivity, profitability, sustainability and providence of transforming agricultural systems in India.

The scoping study was conducted between March and June 2023. An action research approach to the study was adopted, comprising a range of information-gathering events that helped identify the most relevant information and knowledge for the study. These included face-to-face (F2F) and online meetings, several workshop sessions between project delivery partners, as well as a project inception workshop conducted at the Australian High Commission, Delhi on April 3rd to 4th, 2023. A survey questionnaire introduced served as a useful prompting tool when it came to interviewing and undertaking workshop sessions with key informants.

Activities undertaken for the scoping study included:

1 Workshop and Zoom discussion sessions among project partners;

2 Zoom sessions conducted with a range of local Indian organisations and key experts from the government, agribusiness and private sectors;

3 Visits to a range of organisations in India undertaken by project team members;

4 Knowledge and expertise of project team members utilised throughout the study to assist in the interpretation and validation of the information and observations collected;

5 Selecting key points from a range of available reports and studies largely undertaken by project partners and other organisations associated with the VET sectors in both Australia and India, which contributed to the generation of baseline situational information.

It is important to note that the Scoping Study identified the key challenges facing the Indian agricultural sector. It was considered critical that these elements needed to be factored into the design and contextualisation of the pilot training courses by adopting a "whole of farming systems approach". Specific elements included the need to respond to the challenges of climate change, the importance of engaging with rural youth (and establishing career pathways), integrated food production (soil health, water resources, sustainable conservation agriculture systems, safe food production, markets and value-adding), farm size and profitability and supporting a market-driven farm service (input) sector.

The consultation exercise identified a range of new opportunities capable of addressing current challenges facing Indian agriculture. Opportunities identified included (1) precision agriculture (including the use of data-driven technologies); (2) conservation agriculture aimed at enhancing soil health, sustainable conservation agriculture-based systems, transitioning to zero carbon emissions; (3) linking farmers to markets through exploring value adding, identifying specialised market opportunities; and (4) the potential of Farmer Producer Organisations (FPO) and Custom Hire Centres (CHC) empowering farmers through accessing cost-competitive crop inputs and new technologies and improved access to markets. Participants in the study provided valuable insights into what they considered to be the most important emerging skill "skill gaps". Particular attention was directed at identifying those new skill sets associated with the development and adoption of technologies and introducing innovative models for farmer service provision and marketing.

An analysis of specific skill gaps was undertaken by project team members, whereby the identified skills were assessed against currently available skill sets that have been developed by ASCI. The project team developed a set of selection criteria guidelines that were used to help guide the prioritisation of the identified skill areas. Over

100 specific skill gaps were then prioritised and were summarised into themes below.

1. **Farm mechanisation:** providing repairs and maintenance services, commissioning of new equipment through CHCs. Future job roles may include conservation agriculture mechanisation operator and post-harvest processing equipment operator (for value-adding).

2. **Crop agronomy:** undertaking integrated crop monitoring, integrated pest management and advisory services in support of the adoption of best management practices by farmers. Future job roles may include crop agronomy adviser.

3. **Livestock and fisheries enterprise management:** managing on-farm enterprises to maximise productivity and profitability with a focus on managing nutrition and health. Future job roles may include livestock and fisheries advisers, animal health advisers and vaccinators.

4. **Markets;** exploring opportunities and a business case for on-farm processing and value-adding of produce. Future job roles include market analysis, aggregate production, undertaking grading and/or quality checks, and negotiating the sale of produce. These may operate within FPOs.

5. **Digital and smart agriculture:** involving the use of integrated data to support on-farm decision making. Future job roles may include the use of Artificial Intelligence (AI), remote sensing, Internet of Things (IoT), blockchain technologies, climatic data and weather modelling, satellite monitoring, and precision agriculture including drones in agriculture. These can support data integration with market, grading, traceability, and consumer confidence building.

6. **Business and financial management (for FPOs):** incorporating customer and relationship management, business and

financial management and developing on-farm services.

7. **Conservation farming practices:** providing a range of technical advisory services to farmers aimed at conserving and managing the natural resource base of the farm (includes irrigation and water management, CA practices, reducing carbon footprint and carbon sequestration and auditing).

8. **Natural and organic farming systems development;** undertake (as a farmer) a range of practices associated with the transition to, and adoption of natural and organic farming systems; utilising appropriate pest and nutrient management practices and identifying target customers and markets.

9. **Transition pathways to renewable energy;** provide specialist advice concerning the transition to and adoption of renewable-based energy systems in agriculture. This includes conducting demonstrations, energy auditing systems and facilitating farmer and FPO access to renewable energy services and products (solar-powered pumps, solar power, electric vehicles and machinery).

From these, a prioritised sub-set of specific training skills was then selected using a set of criteria (including the opportunity to capitalise on the unique skills products of Australian training providers in addressing identified skill gap areas) for the pilot-training activities, engaging both Australian and Indian Training Partners. The identified skill areas were:

| Digital Agriculture Extension Promoter | Carbon Farming Practitioner | Livestock Green Management Promoter | Integrated Farming Practitioner | Organic Farm and Business Promoter |

In summary, the scoping study provided an informative pathway towards understanding the new and emerging innovations and technological opportunities that would help shape the future of the Indian agricultural sector. Widespread consultation across different agricultural industry sectors and associated value chains helped provide an informative and validated process for identifying future skill areas and importantly emerging skill gap areas. This helped to provide an objective means to identify the sub-set of prioritised training skill areas that formed the foundations for the delivery of the pilot training courses.

3.2 Standards development

The Indian and Australian VET systems have different structures and terminology, which needed to be understood and mapped to enable co-development of Standards. In Australia, Training Packages specify the knowledge and skills required by individuals to perform effectively in the workplace, expressed in Units of Competency (UoC). Training Packages also detail how UoC can be packaged into nationally recognised and portable qualifications that comply with the Australian Qualifications Framework (AQF). The Australian VET system currently has 54 Training Packages which contain in excess of 15,000 UoC.

In contrast, India works with Qualification Packs (QP) that are equivalent to a job role (e.g. Solar Pump Technician). QP are made up of a group of National Occupational Standards (NOS). There are more than 200 QP (job roles) covering a wide range of Agriculture and Allied Sector Segments, and which comply with the National Skills Qualification Framework (NSQF). National Operating Standards (NOS) and Micro Credentials (MC) are becoming more commonly approved for upskilling purposes. A thorough understanding of each of the systems enabled the project to identify opportunities for collaboration.

3.2.1 Mapping of QP/NOS with relevant UoCs from the Australian Training Products

Following extensive consultations with stakeholders in India, Skills Insight worked with ASCI to determine the gaps and emerging skill needs in the Indian agriculture sectors. Five main skill areas along with 20 standalone NOSs/ Micro credentials were established. The skill areas have been listed below:

Digital Agriculture Extension Promoter	Carbon Farming Practitioner	Livestock Green Management Promoter	Organic Farm and Business Promoter	Integrated Farming Practitioner

Once these areas were established, ASCI developed a recommended NOS list in order of priority. This list then enabled Skills Insight to select comparable Australian Units of Competency (UoC) from Australian Training Products associated with to the prioritised list. The method was to look at the Job Description along with the NOS for each skill area and determine the UoC that closely aligned with the skills requirements for the job.

Each unit of competency was closely analysed for relevance to Indian agricultural workers and adjusted and documented to the skill standards required in India. The mapping exercise compared several Units of Competency with relevant NOS and considered whether the AQF's level was comparable to NSQF level when selecting the UoC from Australian Training Products. The details are presented in the following sections.

Digital Agriculture Extension Promoter

Responsible for collecting, cleaning and analysing data generated by the AI and IoT-based applications. The person is also involved in drawing inferences in consultation with the technical experts and preparing reports for managing the agri supply chain efficiently. This may include analysing data related to farm management, mitigating climate change, price fluctuations, market glut, product quality assurance and traceability.

Recommended UoC from Australian Training Products

AHCAGB521: Select and use agricultural technology (Release 1)

AHCAGB523: Interpret and use agricultural data (Release 1)

AHCWRK506: Collect and manage data

Carbon Farming Practitioner

The individual is responsible for adopting a whole farm approach to optimise the capture of soil carbon using various land and crop management practices.

Recommended UoC from Australian Training Products

AHCCFP405: Increase carbon using vegetation and/or agricultural methods

AHCCFP401: Increase soil organic carbon using land management practices (Release 1)

AHCCFP301: Identify the effects of climate change as a factor in land management (1)

AHCCFP403: Identify opportunities and risks in carbon farming projects (2)

AHCCFP402: Prepare to comply with measuring and modelling carbon farming methods (Release 1)

Livestock Green Management Promoter

The person is responsible for disseminating improved livestock management practices to the livestock producers aimed at increasing profitability as well as decreasing GHG emissions. It involves analysing various resource use of livestock and planning for their efficient use for GHGs reduction. This may also include increasing soil carbon sequestration through improved grazing management practices; and by adopting energy-efficient equipment and renewable energy to reduce and displace fossil fuel use. The individual is responsible for disseminating livestock management practices through green management techniques that will reduce GHG emissions. It involves analysing various resource use of livestock and planning for their efficient use for GHG reduction. This may also include increasing soil carbon sequestration through improved grazing management practices; and by adopting energy-efficient equipment and renewable energy to reduce and displace fossil fuel use.

Recommended UoC from Australian Training Products

MSS014015: Improve sustainability through readily implementable change

AHCAGB515: Develop sustainable ag. practices that utilise renewable energy and recycling systems

MSS015042: Measure and report carbon footprint

AHCLSK420: Provide advice on livestock products

AHCORG410: Manage organic livestock production

AHCLSK501: Manage livestock production

Integrated Farming Practitioner

The individual is responsible for selecting a judicious mix of two or more farming components including livestock rearing components using cardinal principles of minimum competition and maximum complementarity with advanced agronomic management tools aiming for sustainable and environment-friendly improvement of farm income, family nutrition and ecosystem services. The individual is responsible for optimising farming practices and sustainable integrated approaches. The individual maximises income, family nutrition and ecosystem services by using appropriate management tools in a mix of two or more farming components including crop production, livestock rearing, aquaculture and allied agriculture activities

Recommended UoC from Australian Training Products

AHCWRK320: Apply environmentally sustainable work practices

AHCPER335; Select plant and animal species for permaculture systems

AHCPER332: Maintain integrated plant and animal systems

AHCAGB302: Keep production records for a primary production business

AHCBIO303: Apply biosecurity measures

AHCBAC309: Undertake preparation of land for agricultural crop production

AHCPER220: Harvest crops in a permaculture system

AHCBAC417: Manage agricultural crop production

MSS014015: Improve sustainability through readily implementable change

Organic Farm and Business Promoter

The individual is responsible for providing the technical know-how in the area of organic input production, the package of practices, on-farm resource management, certification and marketing of organic produce. The person will also foster backward and forward linkages in the value chains for organic agricultural produce, facilitate financial linkages and access to credit for farmers/farmer groups/agribusiness organisations. The individual may provide capacity-building services and strengthen the business potential of the Farmer groups by helping develop an economically viable and environmentally sustainable business plan. The individual is responsible for providing technical expertise in organic farming practices. The individual will provide expertise in the certification and marketing of organic produce. The person will also foster backward and forward linkages in the value chains, facilitate financial linkages and access to credit for farmers, farmer groups and agribusiness organisations.

Recommended UoC from Australian Training Products

AHCSOL508: Manage soils to enhance sustainability

AHCBAC417: Manage agricultural crop production

AHCORG509: Prepare and manage organic or biodynamic certification

AHCWRK404: Implement quality assurance procedures

AHCAGB609: Develop export markets for produce

BSBPMG427: Apply project procurement procedures

BSBTWK401: Build and maintain business relationships

AHCORG412: Arrange selling through community-based marketing (Release 1)

3.2.2 Mapping of NOS and Micro-credentials

Similarly, twenty NOSs/Micro-Credentials identified through the Scoping Study were mapped against the relevant UoCs existing in the Australian Qualification Compendium, as per Table 1.

Table 1 NOS and Micro-credentials mapped against UoC

#	Recommended NOS/MCr List	Recommended UoC
1	Satellite Data Analysis for Crop Management	AHCAGB405: Analyse and interpret production data (Release 1) AHCWRK506: Collect and manage data
2	Seed Bank Management	AHCPER416: Manage a seed bank
3	Design and Construct Vertical Garden	AHCGRI502: Design vertical gardens and green facades
4	Agri Extension in DRE applications and financing	No Match
5	Repair and maintenance of solar powered farm equipment/ machinery	AHCMOM301: Coordinate machinery and equipment maintenance and repair AHCMOM401: Conduct major repair overhaul of machinery/ equipment
6	Practicing Agrivoltaic farming	No Match
7	Fundamentals of Export norms for horticultural and high value crops	AHCAGB609: Develop export markets for produce FWPCOT3310: Prepare timber or related products to meet import/ export compliance requirements - may be customised TLIA0003: Complete and check import/export documentation TLIX0045: Determine import/export prohibitions/restrictions
8	Fundamentals of Aggregation and Post-Harvest Handling of Farm Produce	AHCPHT218: Carry out post-harvest operations AHCPHT313: Implement a post-harvest program
9	Sustainable usage of fertilizer/soil ameliorants	No Match
10	Fundamentals of On-farm strategies to mitigate climate risks	AHCAGB518: Develop climate risk management strategies
11	Operate solar powered appliances for post-harvest operations	AHCMOM301: Coordinate machinery/equipment maintenance/ repair AHCMOM401: Conduct major repair of machinery and equipment
12	Fundamentals of biomass processing for energy	No Match
13	Practicing One Health approach (livestock)	No Match
14	Quality Assurance in grain storage	AHCBAC415: Maintain grain quality in storage AHCBAC208: Prepare grain storages
15	Introduction to regulatory compliances for FPO	BSBAUD412: Work within compliance frameworks BSBAUD515: Evaluate and review compliance

#	Recommended NOS/MCr List	Recommended UoC
16	Fundamentals of business/ marketing plan for a FPO	AHCORG412: Arrange selling through community-based marketing AHCBUS516: Develop and review a business plan
17	Fundamentals accounting and financial mgt practices for FPO	AHCBUS518: Prepare and monitor budgets and financial reports
18	Essentials of managing a FPO	AHCCCF418: Contribute to association governance AHCCCF507: Facilitate the development of group goals and projects Change elements which state 'support' to 'lead' AHCWRK604: Lead and manage an organisation
19	Fundamentals of livestock marketing practices	AHCLSK502: Arrange marketing of livestock - Review and revise
20	Essentials of Mitigating GHG emissions in fish value chain	SFIEMS401: Implement and monitor environmentally sustainable work practices

3.2.3 Drafting and approval of QP/NOS/MCr

Post the mapping exercise, the identified Units of Competency (UoC) were critically analysed by ASCI along with the Subject Matter Experts (SMEs) for relevance to the Indian agriculture system, and also by project Training Partners in the content development phase. The UoCs were further contextualised to suit the needs of the Indian farmers/agri-practitioners/farm facilitators. ASCI then undertook the compliance requirement for approval of all the five Qualification Packs (QPs) and 20 NOSs/MCrs and facilitated approval by the National Regulator for promulgation of the same on the National Qualification Register (NQR). Below is the list of approved QPs along with their NOS details.

Digital Agriculture Extension Promoter

The individual is responsible for advising and facilitating farmers towards the successful integration of digital technologies into agricultural practices at the farmer's level and at a broader level with the agri-food systems. The person is involved in collecting and analysing the agricultural data for facilitating data-driven decision-making. The person is also responsible for creating digital content and disseminating it through various digital media platforms.

Compulsory NOS:

1. AGR/NXXXX: Evaluate available agricultural technologies to enhance production
2. AGR/NXXXX: Create and manage digital content
3. AGR/NXXXX: Apply digital extension strategies for mass outreach
4. AGR/NXXXX: Collect and handle data
5. AGR/NXXXX: Analyse and use agricultural data
6. DGT/VSQ/N0103: Employability Skills 90 Hours

Elective NOS:

Elective 1: Farm Production; (1) AGR/NXXXX: Deploy digital app in crop management precision farming

Elective 2: Agri Supply Chain (2) AGR/NXXXX: Facilitate deployment of digital applications in Post-harvest management, Supply Chain Management and Financial Inclusion

Carbon Farming Practitioner

The individual is responsible for adopting a whole farm approach to optimise the capture of soil carbon using various land and crop management practices

Compulsory NOS:

1. AGR/NXXXX: Ascertain the effects of climate change as a factor in farm/land management
2. AGR/NXXXX: Analyse opportunities and risks in undertaking carbon farming projects
3. AGR/NXXXX: Increase carbon sequestration using vegetation and/or agricultural methods
4. AGR/NXXXX: Enhance soil organic carbon with land management & crop residue management practices
5. AGR/NXXXX: Comply with measuring and regulatory/audits of carbon farming methods
6. DGT/VSQ/N0103: Employability Skills (90 Hours)

Livestock Green Management Promoter

Responsible for disseminating improved livestock management practices to producers aimed at increasing profitability and decreasing GHG emissions. Involves analysing the resource use of livestock and planning for their efficient use for GHGs reduction. This may include increasing soil carbon sequestration through improved grazing management practices and adopting energy-efficient equipment and renewable energy to reduce fossil fuel use. Responsible for disseminating livestock management practices through green management techniques to reduce GHG emissions. Involves analysing livestock resource use efficiency to reduce GHGs. This may include increasing soil carbon sequestration through improved grazing management and adopting energy-efficient equipment and renewable energy to reduce and displace fossil fuel use.

Compulsory NOS:

1. AGR/NXXXX: Develop sustainable agricultural practices that are readily implementable and utilise renewable energy and recycling systems
2. AGR/NXXXX: Plan for sustainable livestock production
3. AGR/NXXXX: Facilitate sustainable livestock production
4. AGR/NXXXX: Advise farmers/customers on livestock products
5. AGR/NXXXX: Assess and document carbon footprint
6. DGT/VSQ/N0103: Employability Skills (90 Hours)

Integrated Farming Practitioner

Responsible for selecting a mix of two or more farming components including livestock rearing components using cardinal principles of minimum competition and maximum complementarity with advanced agronomic management tools aiming for sustainable and environment-friendly improvement of farm income, family nutrition and ecosystem services. Responsible for optimising farming practices through the development of a sustainable integrated approach. The individual maximises income, family nutrition and ecosystem services by using appropriate management tools in a mix of two or more farming components including crop production, livestock rearing, aquaculture and allied agriculture activities.

Compulsory NOS:

1. AGR/NXXXX: Identify compatible farm enterprises for integrated farming system
2. AGR/NXXXX: Undertake integration of different enterprises to ensure resource use efficiency
3. AGR/NXXXX: Implement biosecurity measures
4. AGR/NXXXX: Manage an integrated farm production
5. AGR/NXXXX: Harvest and market crops/produce in an Integrated Farming system
6. AGR/NXXXX: Ensure traceability and sustainability in an Integrated Farming System
7. DGT/VSQ/N0102: Employability Skills (60 Hours)

Organic Farm and Business Promoter

The individual is responsible for providing technical expertise in organic farming practices. The individual will have expertise to facilitate certification and marketing of organic produce. The person will also foster backward and forward linkages in the value chains, facilitate financial linkages and access to credit for farmers, farmer groups and agribusiness organisations. The individual may provide capacity-building services and strengthen the business potential of the farmer groups by helping develop an economically viable and environmentally sustainable business plan and execute it.

Compulsory NOS:

1. AGR/N12XX: Prepare and manage organic certification

2. AGR/N12XX: Assist with the procurement activities

3. AGR/N12XX: Manage soil to improve sustainability

4. AGR/N12XX: Manage crop production for organic certification

5. AGR/NXXXX: Facilitate implementation of produce quality assurance procedures

6. AGR/N12XX: Arrange for selling of organic produce

7. AGR/NXXXX: Facilitate develop export markets for produce

8. AGR/NXXXX: Establish and maintain business relationships

9. DGT/VSQ/N0102: Employability Skills (60 Hours)

3.3 Pilot course development and delivery

Training organisations and Industry training partners were engaged in content development and delivery. Dr Shweta Singh (Australia) and Dr Sai Krishna Nanduri (India) led this component of the project. The training partners came from a diverse range of organisations including the Government, NGOs and the private sector, as outlined in Section 2. They all shared a common passion to deliver agricultural skills training capable of addressing global challenges and opportunities to develop sustainable systems for both India and Australia.

The key opportunities for training partners joining the project were:

1. **Knowledge transfer and co-learning:** Collaborating on this project allowed for the exchange of knowledge, best practices, and innovative techniques specific to course requirements. This enabled a more comprehensive understanding of agricultural technologies and farm practices adaptable to both Indian and Australian contexts.

2. **Capacity building:** By joining forces, this project offered an opportunity for India and Australia to develop training programs tailored to their respective needs, both from a market opportunity (Australia) and to enhance the capacity of farmers, technicians and trainers (India).

3. **Addressing skills gap:** The project activities could contribute to filling significant skill and knowledge gaps in the Indian agriculture sector, particularly among field extension staff, entrepreneurs and farmers.

4. **Global Standards:** As an opportunity to work in the international space and incorporate best practices from the Australian and Indian VET system to practically experience skills development that meets international standards, enhancing the credibility and value of the certification for this course and others.

3.3.1 Training Partner engagement

There was a planned, staggered engagement of training partners in India and Australia, underpinned by clear objectives for joining the DCASCI project. The core project partners maintained communication, collaboration and coordination to ensure the successful implementation and sustainability of the project, with a shared commitment to deliver all pilot training before June 2024. From November 2023 to January 2024 all project partners from both countries were identified. Skills courses and associated partners are described in Table 2.

Table 2 Pilot course with Australian and Indian training partners

Course Title	Training Partner	
	Australia	**India**
Digital Agriculture Extension Promoter	Dr. Shweta Singh	Mahindra and Mahindra
Digital Agriculture Extension Promoter	Dr. Shweta Singh	ICAR-ATARI-Hyderabad
Carbon Farming Practitioner	Carbon Friendly	AKRSP-Gujrat
Integrated Farming Practitioner	Aventia Institute	NSFI
Organic Farm and Business Promoter	Ironwood Institute	CSA
Livestock Green Management Promoter	ACAH	ICAR and ASCI

3.3.2 Course development and delivery timeline

All associated training partners (Table 2) went through consistent process from engagement to delivery, however the time period varied for the five qualifications.

Course conceptualisation (November 2023 to January 2024): Initial discussions between Indian and Australian partners helped identify specific expertise that would contribute to course development. A spirit of collaboration eventuated, identifying how each partner could contribute to, and complement the tasks that were required to develop and deliver the pilot training programs that would eventuate.

Partnership formation and communication (January to February 2024): Weekly meetings together with one-to-one online catch-ups between coordinators (from partnering organisations and the Indian and Australian coordinators were conducted). Items of discussion included clarification of roles and responsibilities, NOSs content within qualification packs, as well as the development of supporting resources (e.g. Participant Handbook, Facilitators guide, Power points and Session Plans) were discussed in detail. Training relating to course content development (based on NOS parameters identified in the Standards component of the project) and developing supporting resources were provided to industry delivery partners (Carbon Friendly and Mahindra and Mahindra); who were new to vocational training processes.

Content development: (January 2024 to May 2024): Weekly communications were initiated and carried out online to ensure that all organisations shared their progress and provided updates on content development. A separate WhatsApp group was established for each of the five courses.

Stakeholder engagement and resource mobilisation: Each of the course program groups discussed who the target audience would likely be for each of the training programs. Once identified, efforts were then made to ensure that the correct NSQF level for each program was targeted in developing the course curriculum. Cross-team collaboration occurred throughout this process to help ensure that appropriate support resources were provided, with invaluable support provided by NSFI team members. NOSs for each of the Qualification Packs developed in the Standards component of the project were planned and developed.

Pre-course preparations: Session Plans for each course were developed, providing a clear plan for the delivery of the pilot training courses. Training of trainers (ToT) sessions were provided by ASCI to help build the capacity of facilitators engaged in course delivery.
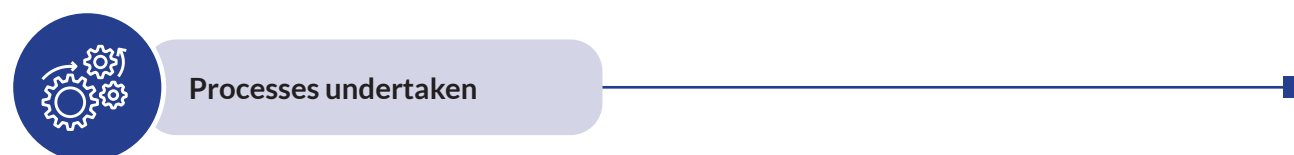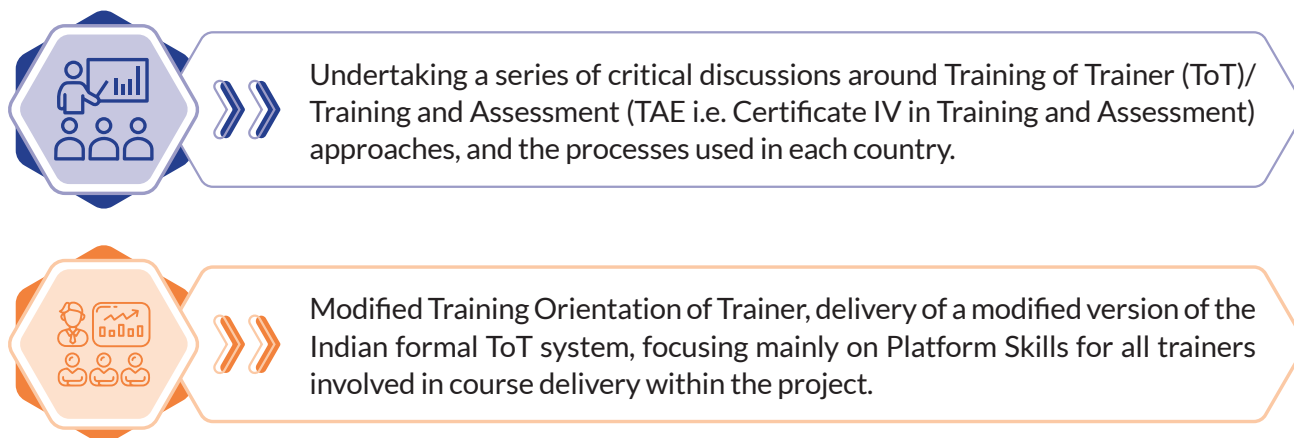
Pilot training (May 6th - June 11th 2024): The delivery of the pilot training courses was conducted across a range of locations across India by project partners (as presented in Table 2). Each program took place over 5 - 6 days. The number of participants ranged from 20 to 35 persons for each of the courses, with the total number of 157 participants trained over the six course deliveries.

3.3.3 Train the Trainer

The approach to this element of the project has been multi-pronged:

Undertaking a series of critical discussions around Training of Trainer (ToT)/ Training and Assessment (TAE i.e. Certificate IV in Training and Assessment) approaches, and the processes used in each country.

Modified Training Orientation of Trainer, delivery of a modified version of the Indian formal ToT system, focusing mainly on Platform Skills for all trainers involved in course delivery within the project.

Processes undertaken

Critical discussion of ToT approaches in India and Australia

These discussions were embedded in regular weekly meetings between the Australian and Indian teams, both in the initial overview of each country's systems, and in the content development and course delivery plans for each individual skill course. The aim of this was to practically manage the co-development of these courses; and was more informal and tailored to individual actors' engagement rather than following the formal approaches in each country.

Dr Shweta Singh visited India in October 2023 and led a workshop where she demonstrated all the elements of TAE training of Australia. The Certificate IV in Training and Assessment (TAE40116) is the qualification prescribed by the Department of Education and Training as the minimum requirement to train and/or assess accredited Vocational Education and Training in Australia. She also demonstrated how the course provides specialised skills and knowledge to design, develop, deliver and assess vocational training courses in Australia.

Dr Singh also showcased the templates and necessary training kit used in the facilitation of vocational education in Australia. She also facilitated a brief course to give a taste of the Australian method of course facilitation (for a summary report see Item 9 in previous Milestone 3 delivery report). Following that, Dr Singh and an Indian team lead by Dr Sai Krishna Nanduri conducted a thorough mapping exercise, which assisted in finalizing the templates to be utilized for course development and facilitation (Item 10 in previous Milestone 3 delivery report). Several synergies between the Australian and Indian templates were detected, and the Indian team identified a few gaps that they might potentially employ to improve their templates. It was thought that because the beneficiaries are Indian, it would be appropriate to leverage current Indian templates for most of the development and facilitation, which would also help to minimize the 'change in training methodology' for Indian trainers.

The October session also assisted in finalizing the distinct responsibilities that Australian RTOs will play in course facilitation. Once all RTOs were partnered for their individual courses, session planning was done collaboratively by the teams.

Face-to-face and virtual teacher training courses were held to ensure that trainers from both countries were educated and compliant. The two qualifications, Certificate IV qualification from Australia and Training of Trainer (ToT) training from India, were thoroughly examined in the weekly virtual meetings between NSFI and Dr Shweta Singh for this purpose. The mapping of these important certifications and skills required to become a qualified Trainer was clear.

Specific roles of the Australian RTOs have been defined and are outlined in the following Terms of Reference for participation and engagement in course facilitation in India:

- To support and review the Indian partner course content (and link back to Australian-orientated course content and materials).

- To work with Dr Shweta Singh and support this course content review.

- To deliver an in person course length of 1 - 2 weeks in duration in India.

- To provide course delivery mentoring and "shadowing support" for course delivery in person for the pilot training courses in India.

- To support the process and training delivery methodologies (adult learning principles, experiential learning, action learning approaches etc).

- To contribute to their learning and engagement processes with Indian partners (ease of engagement, critical success factors, what could have been done better, future opportunities for engagement and longer-term commitments).

Furthermore, it was decided in late 2023 that since the accreditation process of courses in India may take more time, formative assessment would be conducted during the course facilitation. Australian Trainers were engaged weekly to keep them abreast with the content co-development and any other activities which were required to prepare them for facilitation in India. This process continued throughout content development and course preparation once all Indian RTOs were recruited (late December 2023).

Training sessions were conducted during weekly meetings to train on elements of the National Occupational Standards (NOS). This included an understanding of 'what is a NOS' and how to dissect the elements of NOS to plan the content writing. This ensured that content was written according to that mapping. The synergies of Units of Competency (UOC) (Australia) and NOS (India) were explained.

Overview of formal Training of Trainers (ToT) Program in India

For Trainers working in short-term Skill Development programs in the Agriculture and Allied sector, ASCI offer Training of Trainers (TOT) programs in nationally recognized Job Roles. These training programs are based on Govt. of India approved Qualification framework and consist of orientation on Domain (sector and job role-specific subject) and Platform (training delivery), followed by assessment and certification of Trainers.

ASCI imparts the ToT Program both in Physical mode at the ASCI designated TOT Center and in an online mode. Online ToT programs are an option for conducting ToT while leveraging technology/digital skilling tools for eligible Trainers.

A new Trainer is one who has less than 500 hours of training experience or is new in the skilling eco-system. The new trainer must also meet pre-eligibility criteria (i.e. educational qualification and relevant industry experience) set by ASCI for the given job role. The training is 10 days duration. This consists of six days of training on Platform Skills and pedagogy, followed by two days training on Domain Skills, followed by two days of assessments in both Domain and Platform Skills accordingly. Domain and Platform programs may be aligned according to feasibility and convenience.

Model for DCASCI project

For this particular project we undertook a customized model which was carried out based on the project requirements. The customised shorter model was proposed because at the time of implementation, the content development was not yet ready for all the job roles to run a full continuous 10-day model and impart domain training immediately. Additionally, there was a paucity of time until the end of the project time frame.

The Trainer Orientation Training (TOT) Model undertaken within the DCASCI Project is outlined below:

- **Duration:** three days, consisting of two Days Training on Platform Skills, followed by one day training in Domain Technical Qualification Packs (QP), and one day of orientation in Domain QP in a staggered manner.

- **Two Days Platform Training:** This was covered by a platform trainer having good platform knowledge as per the Indian context.

- **One Day Domain Training:** This was ongoing and individual for each course and is being covered by a Domain Subject Matter Expert (SME) selected by ASCI, with the support from respective DCASCI Project partners.

Platform Trainer Orientation Training programs under the DCASCI project

On 2nd and 3rd May 2024 two days Trainer Orientation Training (TOT) program was held on Platform Skills, akin to Foundational Skills in the Australian context. The online virtual program was attended by prospective trainers who would deliver the pilot training in the five major job roles developed within the course.

Indian RTOs that joined the program include AKRSP, KVK Mamnor, KVK Shivaganga, Mahindra & Mahindra, CSA, and NSFI. There were also trainers from the Australian side which included Carbon Friendly, ACAH, Maneeraj Education and Aventia Institute.

Some of the major topics that were covered during the two days session spanning for 3.5 hours each day included Indian Skill Qualification Framework, the Importance of Training, Roles and Responsibility of a Trainer, Objective of Training, Adult Learning, Conducive Environment of Learning Cycle, Key Features of Training, Instructor Learning Material, Effective Training Delivery, Training Structure etc.

Domain Training was covered by a Domain Subject Matter Expert (SME) selected by ASCI and NSFI with the support from respective DCASCI Project partner. This is also being planned further in a staggered manner based on trainer availability and date of starting the pilot trainings. Four Domain sessions for the job roles Carbon Farming Practitioner (11th May 2024), Organic Farm and Business Promoter (15th May 2024), Integrated Farming Practitioner (18th May 2024), Livestock Green Management Promoter (23rd May 2024) was conducted. Several courses had content validation via Australian and Indian experts, which has also supplemented the Domain training. During the Domain Training the Qualification Pack (with compulsory National Occupational Standards), Model Curriculum, Session Plan for the pilot program and additional important discussion was covered.

Recommendations

The focus in this project has been on understanding the ToT processes used in each VET system, and developing a practical approach that could be applied within the project given time constraints. The optimal output would be to co-create the ToT with learning elements from the formal systems of both countries, which will provide a customised approach that takes the best from both systems.

ToT may be an effective intervention point in VET given that it can enable more participants to be targeted with quality training approaches, resulting in a cascading effect.

With the work done in this project including mapping and understanding ToT for each system; development of content that meets Australian and Indian quality standards; and the ability to tap into the ASCI network with formal acceptance of our pilot courses, this could be a logical next step for collaboration between the two VET ecosystems.

3.3.4 Operational strategies for content development

Strategies employed to maintain partner engagement in content development

1. **Communication through regular meetings and updates:** Regular meetings (via Zoom/ teams) provided updates on project progress, time to discuss challenges, and make decisions collaboratively. The lead trainers from both organisations had weekly meetings. Establishing a communication schedule and sticking to it helped to ensure that both partners stay informed and engaged throughout the project lifecycle. Email communication, supplemented by personal contacts was maintained to have a smooth process. Transparent communication was maintained by fostering an environment of transparency through sharing relevant information, including project plans, content development, constraints and challenges at every stage. Feedback loops were designed to enable active participation that ensured the quality of the content developed.

2. **Clear roles and responsibilities:** This was a challenge at some stages of the project. To address this, we tried to define roles, responsibilities, and expectations for each partner ensuring that everyone understood their contribution to the project. Regularly revisiting and updating these roles as tasks were completed helped maintain alignment and accountability among partners. Tracker tools were designed to continually monitor the development of content for courses.

3. C**ollaborative decision-making:** Involving all partners in decision-making processes helped to promote ownership of their respective project roles.

4. **Effective use of technology:** Leveraging communication technologies (email, video conferencing, and WhatsApp) helped facilitate remote collaboration and information sharing.

Creating online repositories or shared drives for documents, reports, and resources ensured that partners had access to relevant information when required.

5. **Regular reporting and documentation:** Establishing a reporting framework that outlined what information needs to be shared, when, and with whom. These were mostly verbal reports however some written reports were also required throughout the process. Regular progress updates were provided to the wider project team and Donor Agency.

Challenges faced and solutions implemented

1. **Communication barriers:** Different terminologies used in each country (both from a training and technical aspect) was a challenge in communication, which was resolved by continuous co-learning by all partners involved. Initially time zone differences and varying communication styles posed light challenges in effective communication. Implementing clear communication protocols, scheduling regular meetings at convenient times for all partners, and using communication technologies that accommodate diverse needs helped overcome these barriers. In the pilot training phase, as the delivery was mostly in local language trainers implemented strategies like role plays and videos to communicate key concepts. Indian partner trainers would also then convert that into the local languages.

2. **Resource constraints:** Many partners were delayed in accessing the right quality resources or practices as the delivery site was in India. Cross-pollination of resources amongst the five project teams helped to resolve the issue. Sourcing some vocational course content resources from publishers and subject matter experts, and then contextualising that was another mitigation strategy.

3. **Differing priorities and objectives:** Partners may have different priorities, objectives, and timelines as both organisations were doing several other projects other than DCASCI. However, facilitating open dialogue and negotiation to align partners' goals and objectives, finding common ground and areas of mutual interest, and compromising when necessary to accommodate diverse perspectives helped overcome differences and promote collaboration. Open communication was key to collaboration.

4. **Validation of course content:** Delays in sourcing the right personnel with subject matter expertise were difficult, however, team effort made it possible as Australian sourced Industry validators from Australia.

5. **Managing schedules and logistics for pilot training delivery:** The pilot training delivery period coincided with Indian elections. For some partners, the model code of conduct had to be adhered to which caused the delivery to be delayed due to restrictions on mobilising participants.

6. **Contextualisation of training material to suit vast agroecological diversity;** With limited time available, subject matter experts from both countries were able to develop a wide range of resources suited to a range of agricultural production systems.

3.3.5 Content development and delivery experiences of project partners

The content development and design process between project partners involved a collaborative and iterative approach. All five courses followed the same process with some differences but were tailored for consistency and achievement of the designated learning outcomes.

1. **Initial planning:** Both parties were familiarised with the model curriculum, qualification packs and course content development requirements.

2. **Objective setting:** Clear course objectives that were practical, relevant, and accessible to local practitioners were developed by project partners. Specific objectives included creating awareness of key topics (within each NOS) and shaping course content with the intent of skills development.

3. **Content development and curriculum design:** Curriculum design guidance provided by ASCI and Skills Insight was followed by the course development teams. The NOS components helped shape the topics and other curriculum elements. The NSQF level helped ensure that the content was shaped to the specific levels of participants for each of the pilot programs.

4. **Expert contributions:** Subject matter experts from both countries contributed to the content and were shaped to suit the needs of the Indian audience.

5. **Drafting modules:** A structured approach was adopted in developing the course modules that were developed for each course. Each module focused on the specific aspects of each NOS. Initial drafts were created collaboratively, with each organization taking the lead on different modules. Feedback loops when developing the drafts were shared with partners internally with organisations for feedback and enhancement.

6. **Design and delivery; followed Instructional Design principles;** (1) learning methods: a mix of instructional methods was chosen,

including PowerPoint presentations, videos, case studies, and interactive activities. One novel technique was to incorporate online virtual interactions with Australian Partners for some of the courses, to help contextualise the knowledge being presented. This blend aimed to cater to diverse learning preferences and (2) visual and practical elements: Visual aids such as infographics, charts, and diagrams were developed to enhance understanding. Practical elements like field exercises and demonstration videos were emphasised to ensure the practical application of knowledge. The project provided resources including qualification packs, a model curriculum and contextualized DCASCI templates

7. **Localisation considerations;** addressed (1) language and accessibility where the content was translated into local languages, and efforts were made to ensure materials were accessible to practitioners with varying levels of literacy and (2) the cultural relevance whereby locally developed case studies catered for local agricultural practices and environmental conditions, making the course more relatable and effective for Indian Participants.

8. **Pilot testing and iteration with the target audience:** the course was piloted with a group of participants ranging from different institutional categories and contexts. Structured feedback on usability, content clarity, and practical application was taken along with observation. Feedback was collected through surveys and general discussions in the class. Participants provided insights into what worked well and scope for improvements.

3.3.6 Course level contributions

1. **Carbon farming course:** The context was the key factor that determined how we shaped the content. Rather than contextualising everything to Indian scenarios, most modules gave an overview of how carbon farming should be carried out.

2. **Livestock course:** Introducing some electronic tags for the livestock, and some practical aspects of animal husbandry were welcomed by Indian participants

3. **Digital agriculture course (Mahindra and Mahindra):** Synthesizing the nine NOS and making five modules as micro-credential for 5-day delivery. Australian Framework of micro-credential was used, followed by extensive consultation from Micro-credential experts in Australia

4. **Business facilitator course:** Developed high-quality resource materials for the organic farming and business facilitator course and connected to networks within Australia and India.

5. **Digital agriculture course (ICAR):** Participants were exposed to various digital tools and other facilities that can be implemented straight away.

6. **Integrated farming course:** Created international standard of course material for the facilitation.

7. **Impact assessment:** The project positively impacted local communities by equipping individuals with practical skills, improving agricultural productivity, and fostering economic development. Qualitative feedback from participants highlighted increased knowledge and confidence in agricultural practices. The Mahindra focus on Knowledge, Attitude, Skills and Habits (KASH) showed this increased for all participants as part of the course assessment.

4

Monitoring and evaluation

Evaluation of the experiences of stakeholders associated with the coordination, preparation, delivery and attendance (trainees) of the pilot training programs were undertaken as part of the project delivery activities. Evaluation tools included the administration of a series of targeted online survey questionnaires to all project participants; and observing the delivery of the training activities at two of the training courses in person.

Outcomes from the evaluation demonstrated that:

The pilot training programs were professionally planned and delivered.

Trainees were enthusiastic and committed to the learning and gained new knowledge and skills.

Indian and Australian trainers exhibited positive teamwork and high levels of collaboration.

Innovative approaches to teaching and practical training exercises were demonstrated

Training providers were challenged by the short lead-in time for the training but were flexible in their approaches to ensure all programs were delivered within the specified time frames.

A range of suggestions provided by all stakeholders highlights opportunities for improving the overall delivery experience. These elements are elaborated further in this section. Many of the suggestions have been taken into consideration when shaping the final recommendations associated with this project.

4.1 Pilot course observations

Out of six pilot courses delivered, two (Organic Farm and Business Promoter; Integrated Farming Practitioner) were visited specifically for Monitoring and Evaluation by Dr Jay Cummins. Both of the pilot training programs attended demonstrated that a high level of planning and coordination efforts had taken place. It is evident that the NSFI team and others engaged in the delivery of the program were able to achieve a lot in a short time frame. The participants attending the training were extremely enthusiastic and interacted well with the trainers and fellow participants. Novel approaches to the delivery of the program were provided by the trainers. Initiatives deployed included exercises that actively engaged all trainees allowing them to share their own experiences and opinions and the inclusion of practical field training activities that provided a bridge between the concepts/theory and application of the knowledge.

For the pilots of the courses Carbon Farming Practitioner and Livestock Farm Facilitator (Green Management), team consultation identified the best practices and areas of improvement. In the course Livestock Farm Facilitator, the lesson plan and content delivered during the pilot aligned well with the needs and expectations of the participants (veterinary assistants). In this pilot, there was a good mix of presentations, discussions, activities, practical exercises and field visits, that kept the participants actively engaged. Practical demonstration of geo-tagging of the animals to record its movement created enthusiasm and interest among the participants. In the case of the Pilot on Carbon Farming Practitioner, a mix of classroom discussions presentations, in-room exercises, intermittent field visits & practical observations have created large participation of the trainees in the sessions. Visits of the participants to micro-forests and bio-gas units, in addition to the live video session with resource persons in Australia, provided hands-on experience and exposure to participants.

Several opportunities were identified that when implemented would help to enhance the training further;

1. Adopting a "train the trainer" approach, in terms of targeting trainees who would then deliver the subject matter-related training to farmers and other service intermediaries. It is important to identify how the impacts from the training can be maximised through up-skilling lead farmers, and agri-industry service personnel.

2. There must be "check mechanisms" in place to help ensure that the training provided reflects the focus of the skills and competency training (satisfying NOS requirements). Such a process needs to respond to the following questions;

   a. Does the content represent "leading edge" technologies and innovations that will equip the skill requirements of new and emerging careers?

   b. Is there sufficient "practical skills training" in using tools and new technologies included in the programs?

   c. Are there appropriate systems in place to assess trainee skills acquisition (extending beyond demonstrated gains in knowledge and skills)?

   d. Are there opportunities provided to the participants during the training to try what they learnt e.g., measuring carbon footprint?

   e. Can more field visits / exposures be organised during the training complementing the specific content being delivered during the training?

In addition to these specific courses, similar observations were made by core staff at all the training programs, which were conducted efficiently in the given time period. Both of

the pilot training programs demonstrated that it is possible to co-develop short course training programs between Australian and Indian VET sector providers. As with all new initiatives, adopting a philosophy of "continuous improvement" will provide the opportunity to develop and deliver even greater high-impact training initiatives in the future.

4.1.1 Trainee feedback

The occupation of the trainees across all programs included farmers, entrepreneurs, research and extension officers, institutional managers, agribusiness service sector staff, students and members of the media. Two programs were dominated by farm advisers (carbon farming) and farmers (integrated farming practitioners).

Trainees rated the overall value of the various pilot training quite high, with programs scoring between 4.5 and 5 (out of a possible maximum score of 5).

Trainees were able to identify a range of important things that they had learned for each of the programs through their attendance. There was "something new" that the majority of participants were able to recall which is a positive outcome.

In terms of the program highlights, there was a range of characteristics identified by the trainees that included the following; (1) the quality of the training and instruction was considered to be very high (2) the quality of training facilities provided was appreciated (3) there was clearly demonstrated (and increased) awareness of the range of technical and innovative attributes associated with the subject matter that was presented.

The trainees provided a range of suggestions for improving the training. By far the most common factor mentioned was the need to provide more practical "hands-on" training. Being shown (or having the practice or technology demonstrated) was one thing, but many trainees would like the

opportunity to try the practice (and develop their skills in the specific technology or practice). A range of other suggestions provided by the trainees related to providing suggestions for advanced training (content) in future courses, building on the foundation knowledge that they had gained.

A positive response to the survey questions was received, providing valuable feedback and constructive suggestions to improve future delivery activities. A summary of the feedback from the trainees (students), the participating training organisations and project team members have been summarised and circulated to participating organisations. The summary will provide useful feedback in terms of identifying how future activities can be further improved.

4.1.2 Recommendations for improved pilot delivery

The following represents a summary of recommendations arising from the evaluation exercises.

1. **Selection of participants for the pilot training program**
   There is a fundamental question that requires further exploration in terms of "who" the pilot training programs should have targeted. Whilst there was merit in targeting farmers (as the main cohort for participation in 'Practitioner' level courses), this may not have aligned with the overall objective of addressing critical skill gaps in the agricultural sector. The question arises as to whether or not such a pilot program would have been better off targeting the service providers (extension officers, NGOs providing training to local farmers and village groups) as part of a "train the trainer" approach, which was the level of the 'Promoter' courses.

2. **Balancing media presence in the program**
   Whilst the presence of the media and subsequent media coverage was to be commended, the prominence of the media unfortunately served as a distraction to the

training. Though difficult to avoid a separate "out of session" engagement with the media would be recommended.

3. **Survey evaluation**

A survey questionnaire developed for all trainees (and to be administered after the training) was provided to participants of the Integrated Farming Practitioner course. There were several incorrect assumptions made, these being (1) that the majority of participants had a smartphone and (2) respondents to the questionnaire understood the principles of answering questions, for example by ranking responses, attitudinal responses, and a general ability

to answer questions through providing comments, ideas and suggestions.

4. **Practical skills training required**

The trainees provided a range of suggestions for improving the training. These included (1) the need to provide more practical "hands-on" training. Being shown (or having the practice or technology demonstrated) was one thing, but many trainees would like the opportunity to try the practice (and develop their skills in the specific technology or practice) and (2) providing advanced training (content) in future courses, building on the foundation knowledge that they had gained.

4.2 Formal feedback from the wider project team

4.2.1 Formal survey

A series of online Survey Monkey Questionnaires were distributed to the pilot program training providers, trainees attending the training programs and the wider DCASCI project team. Feedback was obtained with a range of assessment parameters which are discussed in further detail.

Recommended improvements

A range of recommended improvements were identified that relate to the project more generally and the course development and delivery component. These included (1) timing; in many instances, the lead-in time was insufficient, with more time required to adequately prepare for the courses; (2) it would have been beneficial for the course developers to have been involved in the NOS development; (3) for some courses/training partnerships, a more detailed work schedule and clearer expectations were needed; (4) specific partnerships between organisations should have been initiated much earlier; (5) pitching the training at level 4 or 5 seemed too high (e.g.

Carbon Farming Practitioner); with farmers not able to participate in more advanced skills training or longer duration and (5) the expectations of developing specific training resources and guides were not well defined at the start.

The best thing about being involved in the project

Participants identified a range of positive attributes that included (1) a structured approach to course preparation together with regular communication, guidance and opportunities for co-learning; (2) direct engagement with farmers; and (3) from an industry perspective, the whole process gave valuable insight into the Indian training sector, and the processes undertaken in developing the training process and resources.

Recommendations for future training opportunities

A summary of recommendations was provided, and these are summarised as follows;

1. Agricultural mechanisation, machinery operation (including safety considerations).

2. Safe chemical handling and use.
3. Gender and youth empowerment in agriculture.
4. Specific climate change actions (to support mitigation as well as adaptive management).
5. Consideration of training schoolteachers relating to climate change and sustainable livelihoods.
6. Behavioural change of farmers to improve extension services.

4.2.2 Project team feedback – workshop reflections

In addition to formal survey responses, the team reflected on similar components as part of the Final Meeting (see Section 5.1). A range of suggestions was collated for improving the preparation and delivery of the pilot programs. These included (1) additional team meetings during the preparation phase would have been beneficial; (2) time was a constraint, limiting the opportunity to seek out delivery partners; (3) whilst project team members contributed significantly there were challenges with team members meeting their other work commitments (and having to juggle these) and (4) improved sharing of training resources would have been worthwhile.

Positive attributes of project participation

Team members identified a range of positive attributes associated with their engagement in the project. These included (1) making new connections with new and different actors in the agriculture space; (2) gaining a lot of knowledge about the VET sector in India; (3) learning a lot from the Australian Core team in terms of leadership, project management and the importance of time management; (4) being associated with many Indian and Australian skill experts, understanding the cross-cultural differences and needs; (5) the collegial and enthusiastic nature of the team, and having high-quality partners who delivered as promised and (6) a great experience, to travel and meet people of different cultures, and learn so much about the

different working styles and perspectives of both countries.

Identified challenges

Identification of specific challenges included (1) working with multiple partners, with different contracts and expectations was difficult ; (2) difficult to get a firm commitment from Australian and Indian delivery partners; weekly coordination meetings helped this partially; (3) the "leading edge" technical opportunities that were identified as part of the scoping study may not have been completely captured in the final pilot training products, which were sometimes pitched at more fundamental skill levels and (4) timelines to reach the objectives were short, which made it difficult to coordinate mutual efforts and not let this compromise the quality of the approach and outcomes.

4.2.3 Workshop participant feedback

The occupation of the trainees across all programs included farmers, entrepreneurs, research and extension officers, institutional managers, agribusiness service sector staff, students and members of the media. Two of the training programs were dominated by farm advisers (carbon farming) and farmers (integrated farming practitioners).

Trainees rated the overall value of the various pilot training quite high, with programs scoring between 4.5 and 5 (out of a possible maximum score of 5).

Trainees were able to identify a range of important things that they had learned for each of the programs through their attendance. There was "something new" that the majority of participants were able to recall which is a positive outcome.

In terms of the program highlights, there was a range of characteristics identified by the trainees that included the following; (1) the quality of the training and instruction was considered to

be very high (2) the quality of training facilities provided was appreciated (3) there was clearly demonstrated (and increased) awareness of the range of technical and innovative attributes associated with the subject matter that was presented.

The trainees provided a range of suggestions for improving the training. By far the most common factor mentioned was the need to provide more practical "hands-on" training. Being shown (or having the practice or technology demonstrated) was one thing, but many trainees would like the opportunity to try the practice (and develop their skills in the specific technology or practice). A range of other suggestions provided by the trainees related to providing suggestions for advanced training (content) in future courses, building on the foundation knowledge that they had gained.

The responses to the attitudinal statements highlighted agreement with all statements. There was some variation between the groups and between statements. For example, in one program, the logistics were rated lower than other training programs, but in general, nothing was identified that was considered to be of major concern.

A positive response to the survey questions was received, providing valuable feedback and constructive suggestions to improve future delivery activities. A summary of the feedback from the trainees (students), the participating training organisations and project team members have been summarised and circulated to participating organisations. The summary will provide useful feedback in terms of identifying how future activities can be further improved.

5

Recommended model for collaborative skills development

5.1 Review of the model

The model used within the project was reviewed at length as part of a Final Evaluation Meeting held at the Australian High Commission on 13th - 14th June 2024. The workshop was attended by project team members and delivery partners and provided the opportunity for all participants to share their experiences in designing, preparing and delivering a series of pilot short course training workshops associated with the project.

The workshop proved to be extremely valuable in terms of all partners being able to share their experiences associated with the project. Whilst all six of the pilot course teams shared common guidance in terms of the pilot course formats, each course varied in the approaches to course curricula development and the approaches to selecting the target audiences (trainees). This provided the opportunity to introduce innovative approaches that were then shared with all of the delivery team members.

The workshop comprised a series of presentations and small group workshops, providing the opportunity to "deep dive" into further discussions and synthesis of approaches to content development and delivery, and engagement with industry. Selected summaries from the workshop presentations are provided in this report. In addition to this, a summary of the small group discussion sessions is provided that highlights opportunities for improving the project methodologies adopted in the project and outputs generated. Direct feedback (including challenges, opportunities and critical success factors) is provided concerning the Scoping Study, preparation and lead-up to the pilot short course delivery, and the workshop delivery experiences.

Outcomes from the workshop based on the individual experiences of all partners in the project were then utilised to update the Partnership-based Model for Critical Skills Development (Figure 3). The critical features for success within each project stage are highlighted, and the challenges identified. The updating of the model was based on the following key observations;

1. The need to provide feedback loops through the different stages of project implementation. This reinforces the application of an "action learning approach" to the project.

2. An increased emphasis on Training Partner engagement (earlier in the process), with clear and open communication. Engaging Training Partners earlier in the process (including identifying suitable Training Partners for partnering in the pilot training programs) was strongly recommended.

3. The whole experience identified several additional challenges that were not necessarily identified during the project planning stages. With these in mind, responses to these elements have since been integrated into the model. Further to this, a "risk management framework" could be formally developed to assist in identifying and managing potential risks in the future.

Figure 3 The revised and refined Partnership-based Model for Critical Skills Development.

Steps	Learnings - Critical features of each stage	Challenges
Planning	◂ Ensure sufficient time frame ◂ Key actors need to be part of core team ensuring a good understanding of both systems and ability to institutionalise outputs ◂ All partners need to have a strong commitment and passion for engagement	◂ Sufficient time for co-development ◂ Engagement of RTOs – timing, include different types
Scoping Study	◂ Structured approach to indentify emerging challenges and opportunities ◂ Consult wide range of industry experts, stakeholders, including target participant needs Integrating sector opportunities with existing skills qualifications (ASCI) ◂ Include several feedback loops	◂ Sufficient time to map out scoping study approach factoring in all partner needs
Standards	◂ Each system thoroughly to find synergies and gaps ◂ Develop industry engagement and consultation strategy to identify work practices	◂ Incorporation of feedback loops as part of the mapping process
RTO engagement	◂ Flexibility in planning and delivery ◂ Effective communication and guidelines ◂ Experienced and credible partners and trainers ◂ Industry engagement highlighting leading technologies and relevance of the skill areas in training	◂ Co-creation of content needs sufficient time
Course Development	◂ Addressing cross-cutting themes (youth, women, climate change) ◂ Incorporate complementary skills (e.g. extension, business development, entrepreneurship) ◂ Assessment	◂ Lack of technical material available to develop the content for new skills areas ◂ Difference between Indian and Australian agricultural systems
Teacher Training	◂ Map and understand Australian and Indian approaches to Training of Teachers ToT ◂ Conduct formal ToT aligned with Indian system and incorporate best practices from Aust. system	◂ Timing and workflow
Pilot delivery	◂ Include assessment ◂ Increased focus on practical skills development (complementing knowledge components)	◂ Understanding and identifying the right participants (and their mobilisation)
Evaluation	◂ Action learning approach ◂ Continuous improvement philosophy ◂ Modify for different target groups (according to skill level)	◂ Challenges of multiple regional languages

5.2 Replicable model for other industry sectors

The initial success in the implementation of this project demonstrates the relevance of a partnership-based model for skills development, and its application to the agricultural skills sector. The exercises undertaken through this project did identify several additional process steps that can improve the implementation of the model when used in subsequent activities.

Adapting the strategies and methodologies implemented in this project can address skills gaps and improve training outcomes across various domains. Key elements of the process include:

1. The need to engage the key actors at various levels within the specific VET sector in the project to enable institutional learning to be applied, rather than just documented.

2. The importance of taking a learning approach and working "side by side" in the mapping comparison and adaptation process between the two countries, to help understand the differences in the systems and nomenclature.

3. The provision of adequate time to enable connections to be made and relationships strengthened. Co-development of desired outputs is a time-consuming process, particularly when there is also an element of learning involved.

4. Consideration of the points at which to intervene in the system given limited budget allocation but strong partnerships to leverage from.

6

Opportunities

6.1 Future project opportunities and activities

Implementation of the activities associated with the project, together with the delivery partner workshop identified a large number of future opportunities. Based on the workshop feedback, a synthesis of the project's future opportunities was identified by core project team members. These have been categorised according to country-specific (for India and Australia) and collaborative opportunities (engaging both India and Australia). The project has helped identify and generate a large number of opportunities that should be explored in the future.

These opportunities can be mapped to a range of outcomes including:

1. **Dual certification**
   - Partnerships - continue relationship between ASCI and Skills Insight
   - Jointly develop Training of Trainer process taking the best elements from both systems, that can be shared between Australia and India
   - Joint competency/qualification recognition (Australian and Indian) for delivery of training taking place in India. Skills Insight in collaboration with ASCI could develop NOS that satisfies both Australian and Indian standards. This would include strengthening of the Recognition of Prior Learning (RPL) and assessment procedures in priority areas aligned to the needs of both India and Australia where there is a common cross-over. These may include biosecurity and quarantine standards, OHS&W, personal safety, and specific technical skills training.
   - Development of specific skills assessment methodologies and criteria for students

2. **Scaling and development**
   - Connect to ICAR State Agricultural University network – using the skills courses developed as additional credits for Undergraduate students
   - Connect to ICAR Krishi Vigyan Kendra (KVK – agricultural extension centres) network – skills courses delivered at KVK level
   - Embed within additional Industry and Development networks

3. **Business opportunities**
   - Linking agricultural technology and innovation products and services to training opportunities

4. **Research**
   - Research opportunities for both VET sector and Agriculture
   - Link to Australian Centre for International Agricultural Research (ACIAR) projects

6.1.1 Indian-specific opportunities

1. **Advancing the role of ICAR in VET training;** the opportunity to connect to ICAR SAU network – skills courses as additional credits for UG students and to connect to ICAR KVK network – skills courses delivered at the KVK level.

2. **Industry training networks;** developing industry-specific training networks that actively promote and facilitate VET training

3. **Corporate Social Responsibility (CSR) engagement;** utilising CSR funding resources to assist in supporting broad industry-based VET training through the private agribusiness sector.

4. **Utilising NGOs for extending farmer outreach for VET training;** through working with NGOs there is an opportunity to achieve significant farm adviser outreach in VET training. This approach focuses on a "train the

trainer" approach and utilising farmer group networks through NGO programs.

6.1.2 Shared opportunities (both India and Australia)

1. **Continued relationships between ASCI and Skills Insight** to further strengthen qualification and assessment systems in India. This can be extended to focus on specific training opportunities on issues common to both countries (e.g. WHS, chemical handling, biosecurity, quarantine standards)

2. **Dual certification of VET programs;** potential for qualifications to be recognised in both countries and would be based on the development of Recognition of Prior Learning/Current Competency (RPL/RCC) processes for recognition. This can be extended to develop a bilateral international qualification at AQF Level 3. Qualification structure: (1) compliance (WHS, Biosecurity and traceability QA); operational (limited machinery and equipment) and (3) technical (plant or animal production). The opportunity now is to develop a robust RPL process to assist with recognition of the skills developed. The gathering of appropriate evidence can be utilised to demonstrate competency

3. **Micro-credentials (MC) in VET:** The recent Expert Review Strengthening Skills: Expert Review of Australia's VET system highlighted the potential of micro-credentials to offer flexible training options for various industries. An example is to utilise the Digital Agriculture Micro-Credential project with Mahindra as an opportunity to address urgent skills gaps and the viability of micro-credentials in both India and Australia. Together with the qualification reforms (underway in Australia), there may also be an opportunity for Training Partners to develop their own accredited skills standards.

4. **Integration of agricultural research outcomes into VET Training;** the opportunity is to develop and extend research outcomes and best management practices and technologies. Requires exploring partnership arrangements with ICAR, ACIAR, The Crawford Fund and other research organisations.

5. **TAFE Centre of Excellence:** Collaboration with India's Centre of Excellence in VET provides the opportunity to exchange ideas and enhance skills delivery to improve VET quality in both countries.

6. **Student exchange program in VET:** Introducing a student exchange program with an integrated curriculum tailored to both countries' needs. Such programs can attract need-based funding and contribute to the National Skills Passport initiative.

7. **Scholarly footprint and research opportunities:** the opportunity to present joint papers arising from the experiences of this project to showcase learnings and foster joint action research.

8. **DFAT-supported leadership and capacity-building programs:** promoting DFAT program initiatives such as the Australia Water Partnership (AWP), Colombo Plan and the Australia Fellowship Awards that offer the potential to build the skills and leadership capabilities of VET sector educators and leaders in India through accessing funding through their programs.

6.1.3 Australia-specific opportunities

1. **Linking Business-to-business relationships to VET;** linking Australian innovation and technology/product suppliers to VET-based training in India. Examples include soil and irrigation monitoring and water use. Links Australian-based technology to training and education in new and emerging technologies that support skills development and access to the technology on-farm.

2. **VET workforce blueprint:** The DCASCI project presents opportunities to develop online course delivery. By providing foundational training to teachers, the opportunity to expand the VET workforce globally whilst supporting strategies for the VET Workforce Blueprint across Australia represents a potential opportunity.

3. **Establishing connections with First Nations Australians:** an opportunity to explore skilling programs and promote equity and diversity within the workplace and explore opportunities for establishing relationships

between Indian tribal and Australian indigenous communities.

4. **Drawing insights from the Australian Universities Accord Final Report:** The international project aligns with the goals outlined in the Australian Universities Accord Final Report, particularly in facilitating innovation in qualifications design and addressing skilled professional shortages. By implementing robust governance structures, we can effectively harness overseas talent to bolster our workforce.

6.2 Transnational Education opportunities

A key aim of the project was to test a model of VET market entry into the transnational education (TNE) sector. The motivation for TNE in the agriculture sector may be unique, and help to address issues of common interest such as food safety and security, biosecurity and the development of the carbon economy, to provide mutual benefit. It is not seen as currently financially viable for Australian RTOs to deliver skills training in India themselves as a standalone option. However, the model tested did identify other opportunities for collaborative approaches at different levels that can generate interest and provide multiple entry points for engagement. Examples include using collaborative models; delivering 'taster' programs that can generate interest in Australian agriculture/horticulture training; making connections to create pathways to study in Australia; courses pitched at the Train the Trainer level; and working at a range of course levels.

Examples that Australian RTO partners are interested to explore include:

- Australian-accredited training delivered in India in a collaborative model. Australian RTOs can collaborate with Indian institutions to develop non-accredited vocational education curricula and micro-credentials that meet international standards. This could include integrating Australian vocational training frameworks and qualifications into Indian programs, ensuring alignment with global industry standards. This would potentially need additional financial support in the initial stages of delivery.

- One example is the potential to work within a focused collaborative initiative, with a host provider in India serving as a principal partner in the process. From the Australian side, this could include a group of RTOs who would form a consortium to participate in international delivery of TNE. A steering committee, including representatives from the Australian industry, regulators, and Skills Insight, would meet regularly to facilitate ongoing program implementation.

The programs delivered in India could include and qualify candidates once resources and facilities meet Australian standards. These programs would offer Australian qualifications, skill sets, or non-award taster (participation) programs. The aim should be for candidates to gain meaningful employment, acquire valuable skills, and develop life skills that prepare them for the job market. The primary focus should be on employment within their own countries, with opportunities to seek overseas (or Australian) employment as a final pathway. This would involve credit and advanced standing arrangements prior to candidate engagement.

- To make such programs financially viable, Indian trainers can be used under the supervision of Australian trainers. Leveraging the existing public VET infrastructure in India

can also help reduce costs and streamline the implementation process.

- The Indian education market is highly receptive to Australian education, particularly when there is a pathway for students to complete a portion of their course or undertake an internship in Australia. Developing partnerships with Australian and Indian industries can create opportunities for internships, apprenticeships, and job placements for Indian students. These industry links can facilitate practical training, work-integrated learning, and exposure to international workplace standards. This condition significantly enhances the appeal and viability of TNE programs.

- Australian RTOs can provide training for Indian educators and trainers, using Australian best practices in teaching and assessment. This "Train the Trainer" approach can improve the quality of vocational education in India, enhancing teaching methodologies, assessment techniques, and learner engagement strategies.

- Online and blended learning solutions can be explored to enhance the accessibility and flexibility of vocational education in India. This approach can expand learning opportunities, particularly in remote or underserved regions.

- Quality Assurance and standards advisory can be offered by Australian RTOs through consultancy services to help Indian vocational training providers improve their quality assurance systems and compliance with international standards.

These strategies, combined with the potential for students to experience part of their education in Australia, can make the TNE model a sustainable and attractive option for both Indian students and Australian RTOs. They illustrate that a combination of approaches may work in expanding TNE opportunities between Australia and India. As this project has demonstrated, it requires time to understand each other's systems and identify the most feasible opportunities to deliver quick wins. Aligning critical elements of the system can make it easier for TNE to be implemented (e.g. Regulatory Protocols, Standards, Train the Trainer approaches, Recognition of Prior Learning/ Current Competency). Models may evolve over time and they may need different kinds of support depending on the level of maturity. We can capitalise on ongoing connections in agriculture (i.e. research, trade, development) as a base from which to progress TNE in the agricultural VET sector.

7

Conclusions

7.1 What the project aimed to achieve

The project identified critical and emerging jobs that require advanced agriculture practices across key subsectors to support India's transformation agenda for the agriculture sector, codify them in occupational standards, and develop and deliver the training needed to support these new roles.

Key outcomes of this project include:

1. A demand-driven set of future skills in Indian agriculture that are aligned with existing programs and embedded in effective institutions;

2. Enhanced connections between Australian and Indian actors in the agriculture VET system;

3. A cohort of training providers from India and Australia who can deliver quality training to a wider stakeholder network;

4. A demonstrated, partnership-based process for engaging the Australian and Indian VET agricultural skills sectors to work together, that can be applied to other sectors.

7.2 The project implementation approach

The project has taken a phased approach to delivery, including planning, development, delivery and evaluation. We first undertook a comprehensive assessment to determine the priority for specific skills that are needed in the Indian agriculture sector. This was based on the emerging trends and technological opportunities that were on the horizon for the agricultural sector and which would require specific skill sets. The engagement of Australian expertise in this project provided access to a set of unique skills and expertise that aimed to share Australia's "competitive advantage" in the VET sector.

7.3 Identification of the critical skills gaps

This project sought to identify the critical and emerging jobs that were considered to require advanced agriculture practices that would support India's transformation agenda for the agriculture sector. This process commenced with the initiation of the scoping study. The study provided an informative pathway towards understanding the new and emerging innovations and technological opportunities that would help shape the future of the Indian agricultural sector. Widespread consultation across different agricultural industry sectors and associated value chains helped provide an informative and validated process for identifying

future skill areas and importantly emerging skill gap areas. This helped to provide an objective means to identify the sub-set of prioritised training skill areas that formed the foundations for the delivery of the pilot courses.

The project team then developed a set of selection criteria guidelines that were used to help guide the prioritisation of the identified skill areas. For each priority skill (as identified through the Scoping Study), an analysis of specific skill gaps was undertaken by project

team members, whereby the identified skills were assessed against currently available skill sets that were developed by ASCI with support from Skills Insight.

The identified skill areas were (1) Digital Agriculture Extension Promoter; (2) Carbon Farming Practitioner; (3) Livestock Green Management Promoter; (4) Integrated Farming Practitioner and (5) Organic Farm and Business Promoter.

7.4 Engaging delivery partners and delivering the pilot training

A project team (comprising core DCASCI project team members) was formed and given the responsibility to identify and contract suitable partners who would prepare and deliver the pilot training courses. For each priority skill, potential Training Partners in both Australia and India were identified. Other industry stakeholders (who could potentially contribute to the co-development of standards and training content and support the pilot training courses) were identified. As a result, there was a combination of Training Partners and industry-based organisations identified that were considered worthy and willing to support the delivery of the pilot courses.

Each skill area became a separate work package that engaged pairs of Training Partners from India and Australia and was implemented in a range of target locations. The pilot training programs engaged with local networks to identify relevant stakeholders who could both inform and benefit from the training course to

ensure that it was tailored to local conditions. Throughout the pilot course delivery activities, our team communicated with local networks including government agencies and programs to promote the aims, outcomes and benefits for their local area; aligning with local programs can help embed the pilots in ongoing, enduring and sustainable programs. Ultimately, the pilot courses helped to inform a recommended process for engagement that can be applied more widely to connect the Indian and Australian VET systems.

The content development and design process between project partners involved a collaborative and iterative approach. All five courses followed the same processes but were tailored for consistency and achievement of the designated learning outcomes. The project provided resources including qualification packs, a model curriculum and contextualized DCASCI templates.

7.5 The training experiences and impacts

Trainees engaged in the pilot training programs included farmers, entrepreneurs, research and extension officers, institutional managers, agribusiness service sector staff, students and members of the media. Two of the training programs were dominated by farm advisers (carbon farming) and farmers (integrated farming practitioners). Trainees rated the overall value of the training quite high, with programs scoring between 4.5 and 5 (out of a possible maximum of 5). Trainees were able to identify a range of important things that they had learned for each of the programs. There was "something new" that the majority of participants were able to recall. The trainees valued the commitment of the trainers.

Project delivery partners engaged in the preparation and delivery of the pilot programs identified a range of positive elements from their experiences. These included; (1) a structured approach to course preparation together with regular communication, guidance and opportunities for co-learning; (2) direct engagement with farmers; and (3) from an industry perspective, the experience gave valuable insight into the Indian training sector, and the specific processes undertaken in developing the training process and resources. Process improvements were identified relating to extending the lead-in time, earlier engagement (and input into NOS development and exploring flexible delivery approaches (including an online component).

7.6 The benefits of the Australia-India collaboration

The collaboration between Australian and Indian training providers proved invaluable. The benefits arising from these collaborative partnerships included the following;

1. **Knowledge transfer and co-learning:** Collaborating on this project allowed for the exchange of knowledge, best practices, and innovative techniques specific to course requirements. This enabled an improved understanding of agricultural technologies and farm practices adaptable to India.

2. **Capacity building:** By joining forces, India and Australia could further develop training programs tailored to their respective needs,

thereby enhancing the capacity of farmers, technicians, trainers and policymakers to implement numerous benefits from the newly created courses.

3. **Addressing the Skill Gap -** The project aimed to fill significant skill and knowledge gaps in the Indian agriculture sector, particularly among field extension staff, entrepreneurs and farmers.

4. **Global Standards -** Incorporating best practices from the Australian and Indian VET system helped to ensure the training met international standards, thus enhancing the credibility of the certification.

7.7 The success of the Partnership-based Approach to Critical Skills Development

The initial success in the implementation of this project demonstrates the relevance of the model and applies to the Indian agricultural skills sector. The exercises undertaken through this project did identify several additional process steps that improved the implementation of the model. Adapting the strategies and methodologies implemented in this project can address skills gaps and improve training outcomes across various domains. Key elements of the process include:

1. The need to engage the key actors at various levels within the specific VET sector in the project to enable institutional learning to be applied, rather than just documented.

2. The importance of working "side by side" in the mapping comparison and adaptation process between the two countries, to help understand the differences in the systems and nomenclature.

3. The provision of adequate time to enable connections to be made and relationships strengthened. Co-development of desired outputs is a time-consuming process, particularly when there is also an element of learning involved.

4. Consider the points at which to intervene in the system given limited budget allocation but strong partnerships to leverage.

Outcomes from the project have provided several recommendations to assist in the fine-tuning of the Partnership-based Model for Critical Skills Development. These are;

1. The provision of "feedback loops" through the different stages of project implementation introduces additional elements of consultation and process improvements (as part of adopting an "action learning approach" to the project.

2. Earlier engagement of Training Partners in the development (NOS) and delivery process addresses the need to provide sufficient time to plan and implement the course delivery programs.

7.8 Conclusion

The most significant conclusion to the project is that with some minor modifications, the Partnership-based Model for Critical Skills Development serves as a highly successful model for bi-lateral engagement in the VET sector. The project outcomes were more than satisfied through the outstanding success of this project. Impacts from the project have been significant, in terms of identifying future opportunities for both India and Australia through a range of initiatives that can be explored on a country-by-country basis and importantly for future joint collaborative opportunities. The project has successfully established lasting relationships between all partners, which will positively strengthen international collaboration in the VET skills development and delivery areas.