Green Skills for Rural Youth in South East Asia

Research Report for Plan International Indonesia, Myanmar, Thailand & Vietnam
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<tr>
<td>ACCCRN</td>
<td>Asian Cities Climate Change Resilience Network</td>
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<td>CCA</td>
<td>Climate Change Adaptation</td>
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<td>CSO</td>
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<td>LABS</td>
<td>Livelihood Advancement Business School</td>
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<td>NGO</td>
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<td>TVET</td>
<td>Technical and vocational education and training</td>
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1. Key Messages

Agriculture is the sector in which there is the most need for training and the most potential for employment.

Plan can use its existing programmes in CCA and YEE to effect impact on young people’s access to green livelihoods.

There is a significant skills gap in general environmental awareness and environmentally responsible behaviour.

There is little common understanding of green skills and green jobs amongst young people and employers.

Employers would be interested in green skills if their economic benefit could be demonstrated.

Older community members and agricultural students could be used successfully to deliver training to young people.
2. Executive Summary

The impacts of climate change, including global warming and increasingly severe weather patterns, reach across every country and citizen worldwide, compelling nations to implement sustainable adaptation measures. In order to ensure the necessary ‘green transformation’ of market economies, it is essential that workers are skilled in environmentally friendly and adaptive practices. There can indeed be an element of ‘greening’ in all professions; it is essential, therefore, that the importance of climate change awareness and green skills training is understood by all. Skills development has been proven to ensure labour productivity. Research conducted to date, however, has shown that countries’ transitions to a greener economy are hampered by skills shortages in new environmental professions as well as the lack of skills adaptation taking place in existing jobs. For this reason, development programmes must ensure that green skills training is incorporated into any new and existing skills-based initiatives.

Plan International (referred to in this document as Plan) commissioned this market intelligence report in order to investigate the potential for green skills training in four countries: Indonesia, Myanmar, Thailand and Vietnam. The research has sought to identify the existing provision of green skills training in each of these countries and the sectors in which skills gaps that are likely to occur in the future. In each country, the existing provision of Climate Change Adaptation (CCA) and Youth Economic Empowerment/Solutions (YEE/S) programmes were considered; the research also aimed to identify ways in which these programmes could be integrated to ensure that the knowledge and skills required for climate change adaptation (whether upskilling or seeking alternate livelihoods) were made accessible to the young people who need it most.

Desk research was conducted to understand the issues surrounding green skills; evaluations of existing programmes in both CCA and YEE were also sought, to identify good practice. Field research was conducted in each country with groups including policy makers, employers, NGOs and community groups to understand the ways in which CCA is understood, what ‘green skills’ mean and the esteem in which they are held, and ways that these stakeholders feel that vocational training for upskilling or alternate livelihoods is needed. The views of young people, aged 15 to 24, were also gathered using focus groups and online surveys. The final report, which has been drawn from the analysis for each country, aims to identify specific action points for Plan and other NGOs in the area of green skills.

Key Findings

From the research, we have drawn the following key findings. These findings have been used to develop recommendations and key action items in the subsequent sections.

- There is significant confusion around terminology regarding green jobs and green skills amongst the majority of stakeholders interviewed as part of this project.
- Green Skills can be understood as the knowledge and skills needed to live and work in an environmentally responsible way.
- National policies tend to focus more on promoting environmental technologies for export, rather than offering support for innovative approaches to meet domestic needs.
- For many rural young people seeking employment, their only option is to move to urban centres.
- Older community members are valuable training assets, particularly in engaging young people.
- Agricultural students would like the opportunity to use their skills and knowledge to help farmers in rural areas improve their techniques.
- For many students, working in an environmentally responsible way is important, but they do not know how to access the skills and knowledge they need.
- The primary preferred employment sectors for young people were catering, agriculture, business and education.
- There is a gender bias in many training programmes and expected career paths, with specific jobs being prescribed for boys and for girls.
- Across all countries of study, the sectors with the most potential for generating green jobs are: Agriculture, Forestry and Fishing; Energy; Services; and Construction.
- Green skills are not a priority for employers, but cost saving is; if the financial benefits of investing in green skills could be shown, more employers would be interested.

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2 This refers to the United Nation’s definition of ‘youth’: http://undessadspd.org/Youth/FAQs.aspx
Training content for green skills at local levels needs to include marketing and sales skills, to ensure that farmers are able to develop their business.

While environmental awareness is sometimes delivered as part of training programmes, it is ad-hoc and informal.

Training can be delivered effectively in the community; in the workplace; through apprenticeships and other placements; and in institutions.

Teacher training is a significant gap, with the majority of teachers feeling ill-equipped to deliver training in green skills.

The LABS model is relatively unique in terms of giving young people choice over their career pathways, and providing employment opportunities to suit.

Recommendations and Action Items

While the most common definitions of green jobs focus on climate change mitigation activities, which are not the focus of Plan’s work, it is our conclusion that Plan can effect significant impact in the area of green skills, directly relevant to the livelihoods of young people. From the research, we believe that there are three main areas of green skills development that Plan can focus on:

1. Enabling those in rural areas affected by climate change to learn new skills in agriculture, to preserve their livelihoods.

2. To integrate elements of YEE into CCA programmes to enable young people in areas affected by climate change to train in alternate livelihoods with employment prospects.

3. To integrate knowledge from CCA programmes into the common YEE curricula, to ensure that students receive basic environmental awareness, which will then cascade into their eventual workplace.
Other areas where Plan can achieve impact in terms of improving access to green skills for youth, include the development and use of consistent terminology; encouraging further study into the benefits of green skills; and contributing to raising awareness at policy levels.

As initial points of action, we would recommend the following:

- Developing flexible curricula on:
  - New agricultural techniques and skills.
  - General environmental awareness and climate change.
- Investigating partnerships with:
  - Universities to encourage agricultural students and graduates to undertake community placements.
  - Rural training centres to deliver agricultural skills curricula.
- Engaging community leaders to drive the engagement of young people and to deliver mentoring support.
- Developing a modified version of the market scan methodology to be used in CCA community work.
- Providing teacher training in green skills and ensuring that resources are available online.
- Ensuring that terminology and messages regarding green skills are consistent.
- Developing policy and advocacy work around green skills, and emphasising the need for further research.

3. Research Methodology

Plan International commissioned the study, from which this report has been drawn, in order to investigate the potential for green skills training in four countries: Indonesia, Myanmar, Thailand and Vietnam. The research sought to identify the existing provision of green skills training in each of these countries, and the sectors in which skills gaps are likely to occur in the future. Specific objectives included determining what kinds of skills, knowledge and vocational training young people in rural areas would need to be better equipped to adapt to climate change, assessing what work and initiatives under Youth Economic Solutions (YES) and Climate Change Adaptation (CCA) programmes already exist and identifying the needs and market demands for green jobs in the local labour market in South East Asia. The methodology comprised a full desk review, field research in each of the countries of study, online quantitative surveys, data forecasting and data analysis.

3.1 Literature Review

The existing provision of Climate Change Adaptation (CCA) and Youth Economic Empowerment/Solutions (YEE/S) programmes were considered in each country of study. The research also aimed to identify ways in which the existing YEE model of training and the CCA programmes offered by Plan could be integrated to ensure that the knowledge and skills required for climate change adaptation (whether upskilling or seeking alternate livelihoods) were made accessible to the young people who need it most.

Desk research was additionally conducted to understand the issues relating to green skills and jobs in each country of study. Research covered the economic and social context in each of the countries of study, including education and training available; CCA and YES policy and programmes; green skills policy, programmes and growth sectors; and the current situation of green jobs in national labour markets.

3.2 Field Research

Field research was conducted in each country of study with various stakeholders, including education practitioners, employers, NGOs and community groups, government officials and training institutes, to understand the ways in which CCA is understood, what green skills mean and the esteem in which they are held, and ways that these stakeholders feel that vocational training for upskilling or alternate livelihoods is needed. The views of young people were also gathered through focus group discussions.

Field research in Indonesia was carried out in the East Nusa Tenggara region, covering NTT’s capital, Kupang, as well as the smaller towns of Soe and Kefamenanu. In Myanmar, field research was carried out in Yangon and Mandalay. Chiang Mai and Chiang Rai were selected for field research in Thailand; qualitative data was gathered in Hanoi and Danang in Vietnam. As data was collected in select regions, the field research should not be considered to reflect national findings in any of the countries of study.

Qualitative data gathered included awareness of CCA; green skills requirements and gaps; labour supply and demand; CCA and YES policy, programmes and funding; and stakeholder engagement with young people, local communities, employers and local government.
3.3 Online Surveys

Online surveys were administered to young people using the SurveyMonkey platform; the survey was adapted from one already in use by Plan Thailand. A general survey link was issued in English; translated versions were made available in Thailand and Vietnam.

Surveys aimed to gather data regarding youth comprehension and understanding of green skills and CCA; environmental skills that are employed by young people in daily life; barriers and opportunities for practising green skills at work and in daily life; interest in learning about ways to reduce the impact of climate change; and understanding of the ways in which people may have to adapt to climate change. Quantitative data gathered from survey results were disaggregated by sex and age group where appropriate. Full survey results can be found in Appendix 2.

3.4 Data Forecasting

Data on rural youth was estimated by calculating the historical trajectory of urbanisation and applying it forwards to 2014 and 2019, based on the average annual change between 2009 and 2012 (as calculated from World Bank WDI data). The estimated remaining rural population was applied to figures for total youth numbers in each country for 2014 and 2019, as estimated by the UN Population Prospects (medium variant).

Sector change was estimated by applying historical annual change forward to 2014 and 2019, as sourced from national statistics sources. Green jobs data in the region was very limited; estimates had been made for Indonesia as a proportion of the total sector size by the Green Jobs Working Group, and these proportions were also applied to Vietnamese sector data.

4. Concepts and Definitions

During the design and delivery of this research, it became apparent that the issue of concepts and definitions related to climate change and green skills, was an area of contention and confusion. Different governments, regions and agencies refer to, and understand, these concepts in very different ways; the majority of young people interviewed as part of this project did not understand the terminology at all. In this section, we identify the commonly accepted definitions of key terms, and we also offer terminology that we found to be more easily understood by the people that are most central to the outcomes of this project: not development workers and environmental specialists, but young people.

Climate Change Mitigation and Adaptation

According to the United Nations Environment Programme (UNEP), climate change mitigation refers to efforts to reduce or prevent greenhouse gas emission; climate change adaptation refers to building resilience to the impacts of climate change. As part of this project, however, we found that young people responded best to a clearer, more practical explanation: ‘Climate change mitigation includes activities undertaken to prevent further climate change, and climate change adaptation involves modifying behaviour or lifestyles in line with the impact of climate change’. Mitigation and adaptation have traditionally been approached differently by scholars, with the mitigation research community generally relying on economic modelling and adaptation researchers focusing on community-based research.

While there are clear distinctions between the two approaches, it was clear from the field research that many communities and young people do not perceive there to be a difference between the two approaches, and that general ‘green’ practices are more important than conceptual distinctions. The adaptive actions most commonly understood by young people interviewed included behaviour normally linked with mitigation (e.g. turning off lights and saving water); for these young people, changing their behaviour, both in work and at home, to be more environmentally friendly was extremely important, but many did not know how.

Green Economies, Skills and Jobs

Green Economy

The UNEP’s definition of a green economy is one that ‘results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of

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3 http://www.unep.org/climatechange/adaptation/
as one which is low carbon, resource efficient and socially inclusive\textsuperscript{5}. Although such holistic definitions are widely acknowledged, the literature and policy discussions around green jobs and green economic development suggest an emphasis on climate change mitigation and low greenhouse gas (GHG) development pathways over climate change adaptation\textsuperscript{6}.

**Green jobs**
There is no centrally agreed definition of green jobs as yet, although the ILO characterises them as being ‘decent jobs that contribute to preserve or restore a sustainable environment, be they in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency’\textsuperscript{7}. While this definition was not previously known amongst stakeholders interviewed for this project, it was understood and accepted once explained. It was not understood, however, how young people and employers who were not connected to ‘green’ sectors could contribute to environmental sustainability, or how the green economy would impact those aiming for entry-level jobs.

**Greening jobs**
The ILO defines the ‘greening’ of occupations as ‘the extent to which green economy activities and technologies increase the demand for existing occupations, shape the work and worker requirements needed for occupational performance, or generate unique work and worker requirement’\textsuperscript{8}. The concept of ‘greening jobs’ as understood by interview respondents, however, was different: it focused on ways in which existing jobs could be made more environmentally friendly. For one employer in Vietnam, it involved training staff about effective waste management practices, and embedding this knowledge in the job specification and duties. In his opinion, by making his organisation environmentally friendly, he was improving efficiency and reducing costs; he was also responsible for a cascade effect where his staff would be able to share this knowledge in future jobs.

We would suggest that a working definition of the process of ‘greening jobs’ could be: the process by which tasks and responsibilities within jobs are made environmentally friendly and efficient.

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\textsuperscript{5} UNEP (2011). Green economy pathways to sustainable development and poverty eradication: A synthesis for policy makers. Nairobi: UNEP.

\textsuperscript{6} For example, see Fien & Guevara, 2013: “A ‘green economy’ has four interconnected and mutually dependent goals: increasing economic growth, alleviating poverty by reducing unemployment, increasing social inclusion and equity, and reducing greenhouse gas emissions”.


\textsuperscript{8} http://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/presentation/wcms_195740.pdf
Green skills
The Council of Australian Governments (COAG) provides the following definition: ‘Skills for sustainability, also known as green skills, are the technical skills, knowledge, values and attitudes needed in the workforce to develop and support sustainable social, economic and environmental outcomes in business, industry and the community.’ The main actions required to develop green skills, according to COAG, include:

- Embedding green skills practice and teaching within the regulatory framework, and within the curriculum.
- Skilling VET trainers to deliver green skills.
- Developing strategies to upskill and retrain workers in vulnerable regions, industries and sectors.

Other definitions, however, including that offered by the Environmental Careers Organization (ECO) Canada, focus more narrowly on green skills as being the skills required for green jobs, rather than a wider interpretation that could apply to all sectors and industries. ECO does note, however, that more generic knowledge and skill sets are needed to make green economies successful, including general awareness of environmental issues and sustainable development.

The definition that was most widely applicable to the young people and employers involved in this research, most of whom were not employed (nor intending to be) within ‘green jobs’, was that which held that ‘green skills’ were those that enabled people to work and live in a more environmentally efficient or sustainable way, regardless of sector or industry. This definition had a strong impact upon young people particularly, as it encouraged them to consider ways in which they could develop green skills relevant to their chosen career, and to feel that they were able to contribute to environmental sustainability in a meaningful way.

Recommended Use of Terminology
It is recommended that the terminology used in relation to green skills is appropriate to the audiences to be engaged; in this case, the primary audience of young people, and the secondary audiences of teachers/educators and employers, tend to have limited awareness of environmental issues and the potential for involvement in the ‘green economy’. Live and Learn, based in Vietnam, demonstrated particular good practice in terms of the simplicity and impact of the language and engagement methods they use to raise knowledge about the environment and climate change.

5. The Context: Green Economic Development in South East Asia
The following section provides an overview of the impacts of climate change on countries and individuals in South East Asia, as well as an introduction to green economic development and green industry in the region.

Climate Change in South East Asia
According to the World Bank, climate projections for any individual location within South East Asia are difficult to make with any confidence due to the region’s complex and diverse terrain of mountains, valleys, peninsulas and islands, together with the large array of local climates that are influenced by these environments. Rapidly growing populations and their rising dependence on natural resources and agriculture across South East Asia, however, have made the region increasingly vulnerable to the effects of climate change. The region has been identified as particularly vulnerable to droughts and tropical cyclones (typhoons). It is feared that sea level rises of 100cm by 2100 will contribute significantly to the decline of coastal wetland, low unvegetated wetlands, mangroves, coastal forests, and salt marshes. In Vietnam alone, almost five million people may be displaced if sea levels rise by this amount.

Indonesia, Myanmar, Thailand and Vietnam face increasingly frequent extreme weather systems; the economic costs of which are severe.
Climate Change Adaptation (4CA) in the Asia Pacific Plan International – Australian National Office.

Green economic development in practice includes, according to the ILO, environmental goods and services needed to meet domestic needs. Aside from the human cost of extreme weather, the economic costs are also severe: the estimated costs of Indonesia’s natural disasters stands at an average of US$761 million per year. The Asian Development Bank, meanwhile, forecasts a loss equivalent to 6.7% of GDP annually in Indonesia, the Philippines, Thailand and Vietnam by 2100 if no significant action is taken to address climate change.

Green Economies in South East Asia

Due to its rapid growth, and its vulnerability to crises, the Friedrich Ebert Foundation has described Asia as both a ‘global economic powerhouse and a tinderbox’. The Foundation recommends a model of economic development that includes dynamic rather than resource-intensive growth, social inclusion, ecological sustainability and gender equality. Despite the specific challenges faced by developing and emerging economies, Asian countries have led the way in developing a new paradigm for green growth. In 2005, Asian leaders adopted the Seoul Initiative on Environmentally Sustainable Economic Growth (Green Growth) and the Asia and Pacific region ‘leads the developing world in terms of green patents and green exports’.

It is difficult to track how well green technologies and industries are developing in Asian countries as they are frequently developed and applied across a range of sectors such as agriculture, energy, transport or construction, and so remain relatively invisible to policy makers. Green industries, firms and jobs are also still poorly represented in standard national accounts. Moreover, the trend to date has been for policies promoting environmental technologies to be focused on the export sector or the development of technological expertise, rather than on offering financial support for innovative approaches to adapting the kinds of environmental goods and services needed to meet domestic needs.

Green economic development in practice includes, according to the ILO:

- A cross-sectoral focus on investment in low carbon and carbon reduction technology, with a particular focus on current high carbon industries, including agriculture.
- A subsequent emphasis on higher skilled ‘green jobs’.
- The creation of market prices for ‘resources that were previously considered free, cheap or external to the market - principally carbon, but also water, forested land, waste and biodiversity’.

There is a critical need in Asia for trade unions, civil society organisations and political parties to forge political coalitions and policies to ensure sustainable adaptation to climate change.

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16 http://germanwatch.org/de/download/8551.pdf
18 http://www.preventionweb.net/english/countries/statistics/?cid=80
19 http://www.lse.ac.uk/IDEAS/publications/reports/pdf/SR004/ADB.pdf
21 This was at the 5th Ministerial Conference on Environment and Development in Asia and the Pacific.
Significant change and expansion in industries with limited labour regulations and a large proportion of ‘green but not decent jobs’ where employment conditions are inadequate – such as low wage jobs in biodiesel and ethanol production, electronic waste recycling, and solar panel installation.

Initiatives to harness the above changes for green and ‘decent’ jobs, led predominantly by government, donors, NGOs and local communities, and by business corporate, social and environmental responsibility functions.

The Friedrich Ebert Foundation’s 2013 report on green jobs in Asia, which covers three of this study’s target countries (Indonesia, Thailand and Vietnam), highlights the specific challenges faced by developing economies in achieving a ‘green transformation’. They see a critical need for trade unions, civil society organisations and political parties to forge political coalitions for change. Given that human development gains remain out of reach for large parts of the population in developing economies, green job creation requires ‘more active integration of different policy objectives, so that policies aimed at socio-economic development do not conflict with environmental goals and vice versa’. Of particular importance is the co-ordination of centrally-drafted policies with local planning practices.

**Country Policies**

Climate change in Indonesia is perceived by some to be afforded low priority by policy makers. Policy makers in Kefamenanu, for example, believe that it is the lowest national policy priority after, in order of priority, education, health, construction, agriculture and labour; they also believe that it should be afforded greater priority. Kefamenanu is in a region which is particularly affected by climate change; this may suggest a disconnect between local and national policy responses and priorities in the area of climate change mitigation and adaptation. Climate change activities led by policy makers in Soe include promotion of the use of paper over plastic bags, campaigning in schools on the

importance of healthy living, campaigning about global warming and waste collection, and planting trees. Some of these activities are being undertaken in partnership with NGOs. Government programmes which focus on organic farming in Indonesia, according to one NGO, are not performing well.26

In Myanmar, climate change policies focus on forestry, which benefits disaster risk reduction (protecting villages, for example, from cyclones) and encourages the use of alternatives to wood fuel. Any policies which might apply more broadly to green skills in industry currently have no national targets.27 Climate change programmes focus on disaster risk reduction, food security and livelihoods and awareness raising. ‘Green skills’ as a term is rarely referred to in documentation relating to Myanmar. One of the reasons for the lack of information is that regime change is relatively recent; and education in environment and sustainability related areas was, according to one assessment, ‘at the bottom of the list of the military regime’s priorities’28.

The Ministry of Agriculture in Thailand has been driving greener rice field and plantation processes and the Ministry of Tourism has been working to promote eco-tourism. Both ministries have acknowledged that skills development strategies will be necessary to implement these policies. The Department of Alternative Energy and Efficiency’s action plan detailed the skills gaps in the alternative energy sector.29 The Thailand Climate Change Master Plan aims to implement CCA and climate change mitigation policies as well as promoting citizen welfare, strengthening social and economic security, promoting international cooperation, and increasing competitiveness.30 The Ministry of Labor is working to establish a National Green Skills Office to impact employment in the sector and provide greater opportunities for unskilled workers.31 The Ministry of Agriculture is currently one of the only ministries to provide direct support to industry to make practices greener, by providing training and support for organic agricultural techniques. The National Economics and Social Development Plan (2007–11)32 does not provide a clear or specific strategy on skills development in response to greening.

In Vietnam, the National Green Growth Strategy states that the Government’s key strategic tasks in terms of human capacity development to 2020 are in:

• Developing wastewater collection and treatment systems to meet regulatory standards (between 40-60% depending on the size of the city).
• Environmental upgrading in 100% of severely polluted areas.
• Improving waste collection in line with newly established regulatory standards.
• Improving public transportation in large and medium cities up to 35-45%.
• Enabling 50% of large and medium cities to gain green urban standards.

Vietnam has a variety of policies aimed at targeting climate change; the Ministry of Agriculture and Rural Development, for example, developed an Action Plan for Climate Change in 2008, which aimed to secure food supply and human security by enhancing adaptation and mitigation capability and defining the responsibilities of the relevant agencies.33 This plan, however, has been criticised for its focus on short-term disasters as opposed to long-term climate change adaptation; national and local budgets for CCA have also been criticised by Oxfam as being ‘clearly inadequate’.34 The National Green Growth Strategy aims to green existing sectors; and to generate employment from green industry, agriculture and and services, and the development of green infrastructure.35 Youth employment strategies form a central part of general employment policies. A legal framework for youth employment is in place, including labour and labour regulations, as well as a new enterprise law, cooperative law and foreign direct investment (FDI) law, which have all contributed towards improving the position of youth employment. Despite this central focus in policy planning, the ILO indicates few employment opportunities for young people. Exporting labour has been a key approach for the Vietnamese government to enable access to employment opportunities but also to gain technical skills required within
Vietnam. NGOs report that conflicts between national and local policy are presenting barriers to greening existing industry.

6. Young People

As the primary beneficiaries of Plan’s work, and the focus of this research, obtaining the input of young people was critical to our work. Research carried out on young people in the four countries of study focused on aspects of urbanisation and migration, career aspirations, environmental awareness and gender considerations regarding climate change and livelihoods. Findings from all four countries of study are included in the following analysis, as well as the results of the online survey, which attracted responses across South East Asia.

6.1 Rural/Urban Divide

Geographic location is a critical factor in the livelihoods of young people; the proximity of young people to education and employment can be dictated to a large extent on whether they are in rural or urban areas. The numbers of young people living in rural areas is forecast to fall in all study countries apart from Indonesia, due to a combination of increased levels of urbanisation and falling numbers of youth in the population. In Indonesia, the number of young people is forecast to increase over the next five years, and while more young people will move to cities, this number is not enough to prevent an estimated increase in young people living in rural areas.

Young People in Rural Areas, 2014 and 2019 Estimates

Migration, both intra-country and inter-country, factors in the ambitions of many young people living rurally in the countries of study. Many people in Myanmar, for example, emigrate to Thailand, Malaysia, Indonesia and the Arab states to take jobs in which nationals no longer hold interest. According to the ILO representative in Kupang, Indonesia, young people living in rural areas are not generally interested in agriculture - they prefer to work in trade and services. Young people interviewed in the region believe that they suffered from a lack of job prospects locally, which drove the need to migrate to the region’s capital. In Myanmar, agricultural and other rural employment opportunities have been affected by technology which has, in turn, led to improved productivity and fewer jobs; this has also led young people to migrate into the cities.

Several respondents in fact suggested that their only option may be to move. Some students in Vietnam also noted that young people migrated to the cities and were sometimes unable to find work, forcing some to turn to crime. In addition to the need to migrate to urban centres, students in Myanmar also commented on the need to go abroad to obtain qualifications for certain jobs. Two young people involved in a focus group discussion in Mandalay, Myanmar, reported that they would need to study abroad in order that they could qualify in certain professions.

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38 Field research in Vietnam, October 2013
39 For the purpose of this research, ‘young people’ and ‘youth’ refer to those aged 15 to 24.
40 For data forecasting method, please see Appendix.
41 For full method, see Appendix. Data sources: UN Population Prospects, Medium Variant; World Bank Databank; calculations.
42 Field research in Myanmar, December 2013
43 Field research in Indonesia, October 2013
44 Field research in Vietnam, October 2013
45 Field research in Myanmar, December 2013
Of a group of agriculture students participating in a focus group discussion in Vietnam, three wished to return home to rural areas and the remaining two wished to remain in the city. Of those wishing to return to rural areas, one student had parents working in the agricultural sector: ‘if everyone were to stay in the city after graduation, there would be nobody left to help people like my parents’. He intends to help his family learn organic methods and try to reduce waste; he also wants to use his knowledge about seed plantations to help others in the community. Another student reported that her parents left agricultural professions to become drivers, as farming did not provide sufficient income to enable them to send both of their children to university. She plans to return home to help her community implement new techniques for waste and water management. One student who plans to remain in the city after graduation is hoping to gain knowledge of rural communities through field trips, and then to work in the government to help implement policy changes that will help the affected people. She would also like to implement a project whereby straw, which is readily available in farming areas, can be used to make fertiliser

Despite a gradual fall in the numbers of young people living in rural areas, young people in certain regions were in fact found to commonly return to their villages having completed their studies. In northern Thailand, one of the unintended - and, perhaps, poorly recognised - outcomes of non-agricultural vocational skills training is that many young people from rural areas return to their villages to work in agriculture after finishing their courses. This is particular to the local culture, where young people may go away for periods of time, but in the long term, prefer to remain near their families. Vocational opportunities outside agriculture are limited, as most villages do not need, for example, more than one automotive mechanic. The consequence of this is that an opportunity is missed in terms of providing relevant agricultural training to young people who eventually work in the sector, but train in a different area; this barrier may be insurmountable as there is no way of identifying which young people may return to agriculture, nor would it be appropriate to train them in a subject for which they have currently expressed no interest.

6.2 Employment Ambitions

Many young people in focus group discussions noted concern regarding future career prospects, some directly relating difficulties to the impacts of climate change. Students in Vietnam, for example, expressed concern regarding future employment, particularly in the agriculture and fisheries sectors, due to the impact that climate change was having on livelihoods. One group was particularly concerned that those working in the fishing industry would lose their income due to the impact of bad weather. One young farmer in Indonesia was also concerned that he may have to seek alternative employment that is impacted less by the environment, such as animal husbandry, due to the impacts of climate change on his work.

It is interesting to note that aspirations for future employment in Indonesia focused to a certain extent on the environment, with students commenting that their ideal professions would be working in architecture, ‘designing better drainage and better materials for construction’; ‘teaching about the environment’; ‘teaching about disease prevention’; and working in law enforcement ‘helping people after disasters’. Students at the agricultural college in Vietnam also placed a certain focus on environmentally responsible career paths. One student was studying hybrid seed technology and wants to practice in-vitro fertilisation to develop new seed types. Another student who would like to work in the government noted that policies need to be developed to reduce the impact of climate change. Those young people who reported that they would be returning home after they have graduated, further focused on introducing environmentally friendly practices into farming. One student noted that he wanted to help his family learn organic methods and try to reduce waste, and to share his knowledge about seed plantations to help others in the community.

46 Field research in Vietnam, October 2013
47 Field research in Thailand, September 2013
48 Field research in Vietnam, October 2013
49 Field research in Indonesia, October 2013
50 Ibid.
51 Field research in Vietnam, October 2013
Young people expressed concern in finding employment more generally due to the economic crisis as well as the lack of practical working experience that they gained at university\textsuperscript{52}. It was felt by young people from several focus group discussions in Indonesia, for example, that there are few job prospects available for young people\textsuperscript{53}. Community health and social work were reportedly not subjects that could be studied in Myanmar. Job prospects for those less academic students were further found to be limited in Myanmar. Young people commented that graduates’ marks dictate what they study at university; if, for example, you get a high mark, you study medicine, while lower marks may allow you to study literature. Young people leaving education after middle school were said to have no choice but to work in a shop or a café\textsuperscript{54}. Finally, funding for continued learning to follow their desired career paths was reported by some young people in Thailand as a barrier to progression\textsuperscript{55}.

The primary preferred future employment sectors as noted by young people surveyed across the countries of study were catering, agriculture, business and education. Long term working plans for those young people whose family lived in a rural area was found mainly to be living in a rural area working in a non-agricultural profession for young women, and living and working in the city for young men\textsuperscript{56}. Career aspirations for young people in Indonesia focused on working in agriculture. Other preferred careers included small shop owner, working in the automotive workshop, and producing materials (silk) at home. Several young people who attended focus group discussions in Indonesia commented that they would like to start their own business; lack of capital for start-up businesses was seen to be a problem amongst young people. The lack of vocational skills training and the desire to learn these skills was also mentioned. One respondent, for example, was hoping to open a small shop, but stated that no programmes were available to teach him the skills he needed, such as how to calculate profit and loss\textsuperscript{57}. Students in Thailand commented that local young people tend to return to agriculture after their training and work mostly with cash crops such as rice or corn. Alternative income is earned from handicrafts for tourists. Other career options, such as working as a barber, motorbike mechanic, tailor or in food sales are restricted due to the limited number of mechanics, for example, required by villages. Most young people in the area choose to stay in the village; when they do work away from home, they tend to return after a few months\textsuperscript{58}.

There is often a disconnect between young people’s employment ambitions and their eventual career path. In Myanmar, young people tend to do what their parents do; professional choices are limited by cultural practices and a lack of training in basic numeracy and literacy skills. Young people in Mandalay are encouraged by their parents to attend university; if, for example, you get a high mark, you study medicine, while lower marks may allow you to study literature. Young people leaving education after middle school were said to have no choice but to work in a shop or a café\textsuperscript{54}. Finally, funding for continued learning to follow their desired career paths was reported by some young people in Thailand as a barrier to progression\textsuperscript{55}.

6.3 Environmental Awareness

In most of the field research across the four countries, the concepts related to CCA which were highlighted by respondents tended to be simple actions; these actions were important, but had limited reach, such as planting trees and separating paper waste\textsuperscript{60}. This has led the German development organisation GIZ, which is operational in Myanmar, to suggest that there is a danger in people being overly confident with the little information they have\textsuperscript{61}.

Quantitative research found that CCA is primarily understood by young people as ensuring that communities and places of work have better disaster risk management in place to cope with more frequent and unpredictable weather events. Just one quarter of respondents felt that CCA related to changing or diversifying jobs in response to climate change; almost half of all respondents, however, felt that learning new agricultural techniques is directly related to CCA. When asked about environmental skills used in daily life, the majority of survey participants noted energy-saving and saving water. Very few respondents were unable to identify environmental skills employed\textsuperscript{62}.

\textsuperscript{52} Ibid.
\textsuperscript{53} Field research in Indonesia, October 2013
\textsuperscript{54} Field research in Myanmar, December 2013
\textsuperscript{55} Field research in Thailand, September 2013
\textsuperscript{56} Quantitative research survey results, November 2013
\textsuperscript{57} Field research in Indonesia, October 2013
\textsuperscript{58} Field research in Thailand, September 2013
\textsuperscript{59} Field research in Myanmar, December 2013
\textsuperscript{60} Field research in all four study countries, September to December 2013
\textsuperscript{61} Field research in Indonesia, October 2013
\textsuperscript{62} Quantitative research survey results, November 2013
General environmental awareness in Myanmar and Indonesia is still limited and little information is available in the media; the same is true, to a lesser extent, of Vietnam and Thailand. In rural Indonesia, people are learning about climate change; for example, about which crops might be best suited to certain conditions and that such conditions change. While many are aware of seasonal and weather changes, however, knowledge of the science of climate change is limited. Others have found that weather and climate patterns are no longer predictable. CCA awareness is relatively low in Myanmar, and communities have often failed to link the environmental changes they experience to the effects of global warming. Where people discuss issues related to climate change in Myanmar, it is mostly in the context of bio-products.

Despite a limited general environmental awareness, young people were found to be aware of the impact that climate change has on working life. Survey participants were, for example, asked to note the ways in which people may have to adapt to climate change. The large majority noted that people may have to update occupational skills; almost a third of young people felt that income sources may also need to be diversified.

Many behaviours discussed as part of this research are likely to have negative impacts on climate change and the wider environment, although this is often due to a lack of available information and clear messaging on alternative solutions (and sometimes, a lack of alternative solutions altogether). The majority of people in Myanmar still use firewood, for example, which continues to contribute to deforestation; this is as much about necessity as awareness, as there are few alternatives available for cooking. Farmers in Indonesia also continue with practices such as crop burning and deforestation in many places. The World Wildlife Fund works with Indonesian fishermen in the tuna industry in order to try to increase levels of sustainability. Fisherman meet high local demand for tuna by bombing the water; although they understand that other methods may be preferable, bombing is the easiest way to secure high yields. Future resource loss is not considered.

Adaptation is believed, by some, to be expensive as it is perceived as requiring technology, although others have found non-technological alternatives to adaptation, such as diversifying crops. Although farmers are encouraged to use organic fertiliser, they do not receive adequate training to produce or use it. Current coping mechanisms in rural areas of Indonesia are traditional, as people watch the weather and plant their crops accordingly, rather than applying technology.

In Vietnam, individual students talked of the impacts of climate change on their own families’ livelihoods; a harsh winter had killed one family’s livestock and a water shortage saw another’s crops fail. They also saw evidence of climate change in flooding, rising sea levels, increased rainfall, hotter temperatures and bigger storms. Rising prices are being seen, they said, due to crop destruction, reduced tourism and land erosion due to rising sea levels.

The Vietnamese agriculture students believed that the newness of green agriculture practices in Vietnam would make it difficult for them to find work. As with employers, interest in green approaches to work and living are often associated with finances rather than the environment; healthcare students in Thailand, for example, expressed an interest in learning more about green skills so that they could apply them to their daily lives and save money.

In Indonesian focus groups with young people, climate change was, in part, blamed for the lack of opportunity in rural areas, but young people demonstrated little knowledge or understanding of what climate change was or what it meant to their communities. Agriculture students in Vietnam felt that climate change would definitely affect their careers:

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63 Ibid.
64 Field research in all four study countries, September to December 2013
65 Field research in Indonesia, October 2013
66 Field research in Myanmar, December 2013
67 Quantitative research survey results, November 2013
68 Ibid.
69 Field research in Indonesia, October 2013
70 Ibid.
71 Field research in Vietnam, October 2013
72 Ibid.
73 Field research in Thailand, September 2013
74 Field research in Indonesia, October 2013
those studying plants noted that it would affect the planting schedule, and those studying rural development would need to incorporate projects on green technology.

A number of respondents in the research countries suggested that the study of climate change should be incorporated as early as possible into the school curriculum. Plan may have a role in encouraging the incorporation of climate change issues into the school curriculum, due to prior work engaging with education ministries on integrating DRR and CCA into the school syllabus. There are, however, both political and structural issues which may prevent curriculum changes from taking place; in Myanmar, for example, one respondent commented that the state curriculum is too rigid to incorporate environmental issues.

6.4 Gender Considerations

Literature suggests that the impacts of climate change will be felt more acutely by girls and young women. Research has found that girls in many societies face gender discrimination resulting in lower access to education and healthcare and thus will feel the effects of poverty more overtly. Climate change and resulting severe weather undoubtedly exacerbate extreme poverty; girls are likely be greatly effected by the direct impacts of climate change. There are also distinct protection issues relating to an increase in sexual exploitation and abuse in disasters, which are undoubtedly increasing in number due to climate change. Climate change adaptation programming must, therefore, take gendered

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75 Field research in Vietnam, October 2013
76 Field research in all four study countries, September to December 2013
77 Field research in Myanmar, December 2013
differences in roles and responsibilities in society, as well as impacts felt from climate change, into account in order to ensure maximum impact for beneficiaries.

The evidence base for gender considerations directly relating to CCA and green jobs is limited in the four target countries. One study found that young men and women in rural areas of Vietnam ‘generally share the same challenges’ regarding adaptation to climate change, and that their responses (typically migration) are also similar. The percentage of female dropouts from education in rural areas is, however, higher than that of male dropouts, and female participation in the labour market in rural areas is lower. These obstacles were not directly associated with climate change adaptation and sustainable development; they were, however, found to impact ‘youth human capital on a permanent basis’. The literature suggests that there are distinct barriers to education, training and other key resources for accessing green jobs and livelihoods for young women in rural areas across the target countries.

Regarding training for young women, Plan’s Youth Employment Sub-Sector Strategy (2013-2016) notes that many TVET courses have an in-built gender bias in terms of activities that are deemed suitable for boys and girls; they recommend investigating training options that would present opportunities for adolescent girls and young women, while also ensuring training aligns with market demand. Plan Australia’s experience conducting workshops with girls and women in Laos, for example, found that special facilitating techniques were sometimes required, such as forming separate groups for women in order that they were able to discuss issues and voice their opinions freely.

In addition to barriers to education and training, findings show certain gender differences regarding future career paths. In Indonesia, field research found evidences differences in career paths followed by men and women. Young women in one group discussion, for example, talked about beauty and teaching and men talked about working in agriculture and automotive workshops. Students at REACH Da Nang in Vietnam further commented that men have better chances of employment than women as women are expected to have families and men are more able to do shift work. According to Yayasan Mitra Tani Mandiri in Indonesia, however, the separation of labour between sexes is becoming less apparent. Both men and women now cultivate the land, plant and carry tools. Gender inequality appears to be more of a recognised issue in Myanmar, where discussion about the promotion of gender equality has failed to translate into reality. Women are less involved in community activities than men as they are expected to take care of children and undertake household duties.

Climate change was also found to have varying effects on particular jobs and sections of local economies. Where specific jobs are traditionally gendered (for example smallholder agriculture is associated with women, and fishing or livestock management is associated with men), impacts on income and employment access due to climate change can be expected to vary for men and women.

In addition to gender differences in climate impacts relating directly to employment, research has found negative public perceptions of female engagement in the climate change debate in the Asia Pacific region. Research conducted by Plan in Indonesia, for example, has shown that men and boys are perceived to be more capable actors in reducing risks associated with climate change. A review published in October 2013 by UN Women of 423 National Adaptation Programmes of Action for climate change adaptation further found that only 10% of programmes included any mention of women. Campaigns to brand emerging CCA/green jobs as women’s jobs are a relatively common method for

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82 Plan International Australia, Disaster Risk Reduction iClimate Change Adaptation Capacity Building Interim Report – Year 2, June 2013.
83 Field research in Vietnam and Indonesia, October 2013
84 Field research in Indonesia, October 2013
85 Field research in Vietnam, October 2013
86 Field research in Indonesia, October 2013
87 Field research in Myanmar, December 2013
89 http://www.unwomen.org/~/media/Headquarters/Attachments/Sections/CSW/58/BP3-JayatiGhosh%20pdf.pdf
addressing these issues. There is also an emphasis in the literature on the value of participatory approaches to gender-sensitive and equitable CCA capacity building and local economic development.

7. Green Jobs and Green Skills

General environmental awareness has been found to be limited in all countries of study. Despite limited knowledge of environmental issues, young people were found to be aware of the impact that climate change has on working life. Agriculture students in Vietnam, for example, felt that climate change would have a direct impact on their professional lives, affecting the planting schedule and the need for green technology. As with employers, however, interest in greening professions was often associated with financial concerns rather than the environment. As noted above in Section 4, the definition that was most widely applicable to the young people and employers surveyed was that green skills were those that enabled people to work and live in a more environmentally efficient or sustainable way, regardless of sector or industry.

The following section investigates environmental priorities for the countries of study and the correlative areas of work that these priorities encompass. Despite the limited availability of disaggregated data on employment numbers in green jobs, Section 7.1 provides estimations of green jobs in each of the countries of study as well as an overview of national policies and priorities regarding green employment. Section 7.2 further discusses specific green skills in employment, and gives an overview of qualitative and quantitative findings from the countries of study regarding understanding and utilisation of green skills in the labour market.

7.1 Green Jobs

Green jobs include a wide range of professions that help ‘preserve or restore a sustainable environment’. Jobs termed as ‘green’ are not limited to those working directly in new environmental sectors such as renewable energy, but also include, for example, professions that work to limit the emissions of greenhouse gases in existing industry.

Environmental priorities for developing countries include urban air quality, municipal waste management, freshwater shortages, water pollution and poor sanitation, coastal management, deforestation and unsustainable land cultivation and climate-mediated environmental impacts (especially heavily populated mega-deltas). These translate into the following types of ‘green’ work areas:

- Introducing controlled and sanitary waste management services and enhancing decent work in the informal waste management sector.
- Introducing energy-efficient cooking stoves, solar water heaters and solar panel systems in place of unsustainably harvested firewood, creating jobs in the manufacture and servicing of such equipment and reducing the burden of firewood collection.
- Building and servicing biogas plants to provide eco-friendly and economical fuel for lighting and cooking, in place of kerosene.
- Building and servicing composting plants to convert waste into natural fertilisers that can replace the costly urea-based or petroleum-based fertilisers that can pollute groundwater reserves, and that can replenish the organic matter content of soils.
- Small-scale generation/decentralised power grids based on renewable energy technologies or industrial co-generation, rather than on large oil- or coal-based power plants and centralised, inefficient and loss-making electricity grids.
- Labour-intensive, environmentally sustainable and climate-resilient infrastructure.
- Low-carbon public transport schemes.
- Sustainable natural management, such as forestry.
- Eco-tourism.

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91 Field research in all four study countries, September to December 2013
92 Quantitative research survey results, November 2013
93 Field research in Vietnam, October 2013
The ILO reports that ‘the need to create green jobs in developing countries is great, but may not be considered the absolute priority, considering the dire need for jobs in general’. The organisation therefore calls for efforts to be invested in demonstrating the benefits of environmentally sustainable labour market policies.

There is limited disaggregated data for Asia on green industries or green employment and, in general, estimates of green jobs vary widely depending on the methodology used and what assumptions are made. Challenges around measuring green jobs are compounded by extensive informal sector employment across the region.

In the agricultural sector, demand for green jobs is low in many areas across the region. Productivity is a key factor in the use of non-green practices in agriculture and fisheries; farmers face market pressure to use chemical fertilisers in order to increase their outputs. Consumers often prefer non-organic produce that uses pesticides and other chemicals because the produce is larger and has a more regular form. Organic produce is also more expensive to grow and to buy. Despite increased demand for the production, marketing and selling of organic fertiliser, demand for organic farming in general is limited, and that demand may need to be stimulated through non-market mechanisms such as regulation.

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96 Ibid.
99 Field research in Indonesia, October 2013
In the Philippines, specific green competencies have been built into existing qualifications by the Technical Education and Skills Development Authority (TESDA); for example, the Pest Management qualification now includes agri-ecological pest management, and an Organic Agriculture Production qualification has now been developed.²⁰

Indonesia

In 2008, the Asia Pacific Green Jobs Network estimated the numbers of green jobs in Indonesia to be as follows:

1. Agriculture: 2,434,000 green jobs (6.2% of total)
2. Transport: 603,000 green jobs (9.8% of total)
3. Manufacturing: 331,000 green jobs (2.6% of total)
4. Forestry: 242,000 green jobs (17.6% of total)
5. Construction: 187,000 green jobs (3.5% of total)
6. Fisheries: 97,000 green jobs (18.1% of total)
7. Tourism: 11,000 green jobs (no data on the percentage of total jobs)
8. Energy: 4,700 green jobs (2.3% of total)
9. Mining: 300 green jobs (0.03% of total)

Due to a lack of detailed sector data, we have not attempted to project these figures forward to 2014 and 2019.

Myanmar

Myanmar is at a turning point in terms of economic development, with international involvement only just taking off. Green jobs do not appear to be a priority; one INGO suggested that the majority of people are struggling to get sufficient food each day, which reduces the importance of climate change to a concern of lesser immediacy.²¹ No labour force survey has been conducted since 1990; while there is one in development in conjunction with the ILO, it is unlikely to be undertaken before 2015. This means that there is no national or local labour force information on which to make an assessment of green jobs; they are currently likely to be highly limited, however.

Thailand

The energy, industrial and service sectors have the greatest potential for generating green jobs in Thailand.²² Tourism increased by 20% in the first half of 2013, seeing a 14.5% rise in the number of hotels and restaurants. Transport and construction also grew by 8% and manufacturing by 2%. The sectors traditionally thought to have the highest demand for green skills, agriculture and fisheries, grew by just 0.4% due to diseased shrimp and a fall in rice production.²³

Sector change for both the labour force as a whole and for the youth labour force (age 15-24) has been estimated for 2014 and 2019 by applying the annual change between Q3 in 2012 and Q3 in 2013 forward. The youth labour force size was estimated taking account of the shrinkage in numbers of young people over the next five years. The most significant growth sectors for young people are likely to be Finance and Insurance (growth of 69.4%); Electricity, Gas and Steam Supply (growth of 48.4%); and Administrative and Support Services (34.1%). While the agricultural sector is the largest employer in Thailand, its growth is predicted to decline in the next five years, with the youth workforce in the sector predicted to drop by almost 12%.

Using the proportions from the ILO Indonesia paper, we estimate that there are currently around:

- 1,005,000 green jobs in the agriculture, forestry and fishery sector, of which around 132,000 are held by young people.
- Fewer than 20 green jobs in the mining and quarrying sector, of which around a tenth are held by young people.
- 144,000 green jobs in the manufacturing sector, of which around 19,000 are held by young people.
- 77,000 green jobs in the construction sector, of which around 10,000 are held by young people.
- 83,000 green jobs in the transportation and storage sector, of which around 11,000 are held by young people.

²⁰ Building Green Societies Through Green Jobs Training Presentation, TESDA 2014
²¹ Field research in Myanmar, December 2013
²² http://library.fes.de/pdf-files/bueros/thailand/09423.pdf
Vietnam

Using the proportions from the ILO Indonesia paper and applying them to sector data from Vietnam\textsuperscript{105}, we estimate that there are currently around:

- 1.5 million green jobs in the agriculture, forestry and fisheries sector, 400,000 of which are held by young people.
- 200,000 green jobs in the manufacturing sector, 90,000 of which are held by young people.
- 155,000 green jobs in the transport and storage sector, 40,000 of which are held by young people.
- 115,000 green jobs in the construction sector, 40,000 of which are held by young people.
- Fewer than 100 green jobs in the mining and quarrying sector, around a third of which are held by young people.

Although employment policies in Vietnam have touched on the issue of green jobs, there is a greater focus on ‘decent work’\textsuperscript{106}. NGOs in Vietnam have a good understanding of the difference between green jobs and greening existing jobs, but report that the responsibility for greening jobs lies with employers. GIZ in Vietnam has suggested that more work needs to be done on greening existing industries. This will, they suggest, require the provision of incentives to employers; they believe that employers need to value green skills enough to include them in occupational standards and that the Government should engage with them on this issue\textsuperscript{107}.

There is a certain overlap with the demand for green jobs and national policies (see Section 4.4) in that demand can be created or enhanced through certain policy approaches. The Vietnam Green Jobs Strategy looks to green existing sectors with more efficient use of energy and natural resources. It also intends to generate a more environmentally friendly lifestyle through greater employment in the green industry, agriculture and services, which would be promoted by investment and the development of a green infrastructure. A renewable energy technology market will be developed, creating domestic demand for green technology and the development of a sustainable infrastructure is to include irrigation and water, energy and transportation. In greening the existing production (manufacturing) industry, the Vietnam Green Growth Strategy hopes to improve conditions for the creation of a ‘green production’ sector, with specific attention paid to green technology. The strategy also pledges economic and technical assistance to promote the application of high technology to traditional products that can be greened. These include\textsuperscript{108}:

- Herbal medicine
- Eco-agriculture
- Forestry
- Fisheries
- Foods
- Commodities
- Garments made from locally produced material

In Vietnam, the ILO claims to take a value chain approach to youth economic empowerment projects, meaning that they develop and stimulate the market, creating links with the markets to which they export\textsuperscript{109}. This approach may also be useful for programmes involving green skills, through creating a demand for green jobs, and therefore green skills, throughout the value chain. This approach runs the risk, however, of being prescriptive in terms of the employment prospects available to young people, as the opportunities will be dictated by the market that is chosen for development, rather than by the career pathways that young people wish to pursue.

### 7.2 Green Skills

Young people surveyed through quantitative research on the whole identified green skills to be directly related to the working environment. Almost half of all survey participants identified green skills as those that would help them to reduce their employers’ impact on the environment, with 41% also noting that green skills are those that enable

\textsuperscript{105} http://apgreenjobs.ilo.org/resources/resource.2013-07-22.0113256166/at_download/file1
\textsuperscript{107} Field research in Vietnam, October 2013
\textsuperscript{108} Ibid.
\textsuperscript{109} Field research in Vietnam, October 2013
employers to adapt to climate change. It is interesting to note that young women primarily identified green skills as work related, whereas almost 60% of young men felt that green skills are those that enable the community to adapt to climate change. Older survey participants, above the age of 23, were also much more likely to identify green skills as those that enable the community to adapt to climate change.

Many employers from across the region interviewed for this research indicated that green skills are not a priority for them, but that cost saving is. There are many commonalities between the areas in which employers indicated that

\[110\] Quantitative research survey results, November 2013
\[111\] Field research in all four study countries, September to December 2013
they are trying to save money, and green approaches to employment, mostly in the area of saving energy: examples include using less fuel and turning off lights and equipment when not in use. This suggests that articulating cost savings may be as useful as articulating positive environmental impact when promoting the need for green jobs and skills.

In Thailand, employers do not necessarily look for green skills, but instead focus on areas such as language, appearance and behaviour. Le Meridien, for example, looks for a ‘positive attitude and willingness to work and learn’ above anything else. It provides its own in-house training in activities related to the environment, such as energy saving and waste management.

Regarding barriers to practising green skills at work, young people mainly commented that those around them were not concerned with environmental skills. Young women mainly felt that green skills were unimportant to them, as well as not feeling that there is a place in their lives for green skills; young men primarily felt that they had no time for green skills.

Students in Vietnam were found to know very little about climate change and have limited green skills; focus is more generally placed on energy saving, waste and ‘environmentally friendly’ behaviour, as determined by the government’s curriculum. Almost two thirds of young people surveyed across the countries of study did, however, note that there was an environmental element to their course; young women were more likely than young men to state this. Water minimisation, recycling and reusing materials, as well as energy-saving, were identified as the main skills related to environmental sustainability learned whilst studying. Students noted that incorporating an environmental element into courses is more for the purpose of ‘greening jobs’ than developing green skills. Green skills training is also not provided as a unique course or element in the curriculum in Thailand, but is embedded, where possible, into all courses. This was found to include separating rubbish for recycling, energy saving or using natural products such as natural beauty products. Students were found to be generally more interested in practical career guidance than environmental training and certain respondents suggested that green skills should be integrated into workplace training, rather than the classroom. There was, however, found to be some interest in learning about green skills amongst young people surveyed across the four countries as a whole. Over a quarter of young people, for example, felt that it would be useful to learn green skills as part of their course of study. The best way to learn about green skills, according to the young people surveyed, is through training workshops and conferences.

In Indonesia, training for young people and migrant workers does not generally include green skills. Any existing programmes that are driving these are considered ineffective and lessons are not being recorded or learned. Skills most notably lacking are marketing and technical skills, which should be provided with any entrepreneurial or business training.

8. Green Skills Training

The following section investigates several aspects of green skills training in the countries of study. Section 8.2 discusses the green skills training content of various technical and vocational courses, including those based on the agricultural and the services sectors. Training delivery modes, including through community empowerment and using women as agents of change, are covered in Section 8.3. Challenges in delivering green skills training, including resources available for training, teacher knowledge and delivery in rural areas, are finally discussed in Section 8.3.

8.1 Training Content

Participants of the UNESCO-UNEVOC Greening Technical and Vocational Education and Training (GTVET) conference of 2013 proposed that any new training programmes should focus not only on technical skills, but also on soft skills: ‘learning to learn, on development of emotional, social and spiritual intelligence and to understand and exercise collective learning’. The conference also acknowledged the need to develop training curricula for green handicrafts and the

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112 Field research in Indonesia, October 2013
113 Field research in Thailand, September 2013
114 Quantitative research survey results, November 2013
115 Ibid.
116 Field research in Indonesia, October 2013
agricultural sector\textsuperscript{17}. Existing jobs are likely to require new skills sets in ethics and sustainability; other jobs may require certain technical skills related to climate change adaptation\textsuperscript{18}.

One of the key points to emerge from this research is the vagueness attributed to green skills when viewed at a macro level; different skills are needed not only depending on the sector and country, but according to the very particular local circumstances in which the local employment markets operate. Adaptation requirements for agricultural practitioners are dependent, for example, on a range of factors including which local crops grow well, the amount of rainfall, variations in seasons, the interaction between local circumstance and local climate impacts (for example, the fact that villages in cyclone-affected parts of Myanmar fared better when they had a belt of trees acting as a buffer), soil quality, level of erosion, access to technology and the potential to develop alternative livelihoods\textsuperscript{19}. Training content, therefore, will need to be tailored at a local level. In northern Thailand, for example, there are specific demands on the soil through the production of cash crops such as rice or corn, which are increased by the use of chemical fertiliser; one youth leader interviewed as part of this research suggested that helping young farmers to diversify into crops such as mushroom cultivation or chicken farming would help to reduce damage to the soil\textsuperscript{20}.

In agriculture, the training focus tends to be on the development of technical skills, but marketing and sales skills are also desperately needed in many areas\textsuperscript{121}. While it is easier to incorporate a green element into technical skills training, the promotion of green practices through sales and marketing could be a key element in order to support those working in agriculture to find new markets for their products.

In addition to the focus on technical skills development for the agricultural sector, research found green skills training content in courses directed at the services sector. In Vietnam, for example, hospitality and catering students who participated in the primary research have an environmental day as part of their studies, and are required to research waste management\textsuperscript{122}. At the focus group in Chiang Rai, Thailand, with vocational trainers, it was suggested that green skills training could involve the incorporation of energy conservation into laundry processing courses, the promotion of the use of natural products in housekeeping courses, the use of environmentally friendly materials in dressmaking courses, the use of non-chemical products in car care courses and the incorporation of reuse and recycling concepts into office management courses. One trainer in Thailand suggested that green skills did not need to be specifically highlighted to students, but incorporated naturally into their training; their greatest priority is income generation\textsuperscript{123}.

### 8.2 Training Delivery

Existing youth economic empowerment and climate change initiatives delivered in South East Asia have employed various training delivery modes that are commonly accepted as good practice in development. These encompass local ownership, using women as agents of change, ensuring community leadership, partnering with industry and focusing on value chains.

Community ownership is critical to the success of most development projects; the delivery of training in green skills is no exception. A good example is the New Idol Farmers Group in Indonesia, which is a collective formed of farmers, drivers and labourers. Crop diversification is a key part of their approach in order to reduce the impact of climate changes. Group members receive informal on-the-job training. The group leader measures impact in terms of the volume of produce and by the fact that most labourers can afford to buy a motorbike after working in the group for just three months. An advantage of informal training delivery models, such as this, is that there is less need for formal training resources, and greater adaptability to changes in skills needs and training subjects. Available financial and material resources were further found to provide a challenge in the delivery of green skills training. In Indonesia, for example, funding for training and related infrastructure tends to be insufficient\textsuperscript{124}. Barriers to the provision of green skills training in northern Thailand also included the need for financial resources, appropriate equipment and advocacy at a policy level\textsuperscript{125}.

Training can also be offered effectively in the workplace; in Chiang Mai, for example, many employers prefer to provide in-house training rather than taking on employees who have been trained locally\textsuperscript{126}. The challenges inherent in this

\textsuperscript{17}http://pure.pascalobservatory.org/pascalnow/pascal-projects/pure/melbourne-pure-case-studies-'green'

\textsuperscript{18} Analysis from the four country field research and international literature review

\textsuperscript{19} Field research in Thailand, September 2013

\textsuperscript{20} For example, field research in Indonesia, October 2013

\textsuperscript{21} Field research in Vietnam, October 2013

\textsuperscript{22} Field research in Thailand, September 2013

\textsuperscript{23} Field research in Indonesia, October 2013

\textsuperscript{24} Field research in Thailand, October 2013

\textsuperscript{25} Field research in Thailand, September 2013

\textsuperscript{26} Ibid.
mode of delivery, however, are related to employer engagement and recognition of the need for training; until more evidence is produced as to the benefits of developing green skills in all businesses and sectors, it will remain difficult to convince employers of the potential impact to their profitability. Ensuring the quality of training delivery in the workplace is also a challenge; without common curricula or even common principles regarding green training, quality will remain variable. Organisations such as Live and Learn (Vietnam) are demonstrating good practice in this area, however, with the production of youth-friendly material, and through their work with the government.

Training delivery through apprenticeships may also be a good way to engage young people in the workforce and to deliver training in green skills; this may be appropriate also for building the workforce in green sectors. Plan’s Livelihood Linked Vocational Education for Thailand (LiVE) project uses skills development centres to deliver market-linked training for young people from disadvantaged backgrounds; business partnerships are developed in order to offer participants two-month apprenticeship placements. The Transitions programme, delivered by Youth Connect, aims to bridge the gap between youth and employers and provide young people with practical job skills and apprenticeships. Training is offered in maths, Thai and life skills; courses are 12 weeks long and lead to three month apprenticeships.

In order to deliver training on any form of environmental awareness or green skills, however, it will be critical first to deliver training to the teachers. During the research, teachers were generally found to be lacking knowledge of green skills, having not participated in any green skills training themselves; ensuring that teachers receive such training is an

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127 Information from Plan
128 http://www.youthconnectthailand.org/about/
129 Field research in all countries of study, September to December 2013
important challenge\(^\text{130}\) (this is an important advantage of Plan’s LABS model, as teachers work within industry). In Vietnam, for example, teachers require more formal training in order to integrate climate change into the curriculum, as their current knowledge is generally self-taught and focuses on saving energy. Getting teacher and/or trainer buy-in is a key barrier; in Vietnam, staff at the Nguyen Binh Khiem Technical School believe that teaching about the environment is important, but while they would be prepared to deliver further environmental training in a dedicated workshop, they do not believe that they would be able to dedicate any additional time to the subject\(^\text{131}\).

In addition to the need for teacher training, teaching on climate change-related issues tends to be classroom-based and to have little practical application. According to one of the NGOs interviewed in Indonesia, students need to be encouraged to apply their knowledge to real life; the Ministry of Education can help to facilitate this by training teachers in supporting the practical application of knowledge\(^\text{132}\).

In some areas, delivery challenges are compounded by the small size of many villages and hamlets; one agriculture student interviewed in Thailand, for example, comes from a village of only seven households\(^\text{133}\). In these situations, peer to peer learning may be the most appropriate delivery mechanism. In areas with high youth migration away from villages, the integration of CCA and YES programmes into community development initiatives with younger children may also address delivery challenges: training can be developed according to community needs and delivered by local institutions/peer teaching.

9. Integrating YEE and CCA Programmes

9.1 The LABS model

The Livelihood Advancement Business Schools (LABS) model, as originally developed by Dr Reddy’s Foundation, focuses on matching supply and demand of labour, and providing young people with life skills as well as the technical skills they will need for work. The LABS model is utilised by Plan’s Youth Economic Solutions (YES) programmes in many countries, but to varying degrees of depth and effectiveness; the Ministry of Planning in Indonesia will reportedly use this model to assist their TVET planning\(^\text{134}\).

The goal of Plan’s YES strategy is to improve the standard of living for excluded and marginalised youth; the purpose is to secure work for 50,000 young people by 2016. Employment is the key success factor, rather than completion rates; there is also significant focus on community mobilisation and improving the value chain. There are two ‘tracks’ for YES programmes - the LABS model and the Entrepreneurship model. To date, Plan have trained over 20,000 young people using these models; approximately 78% of these young people have secured work and 76% report improved quality of life\(^\text{135}\).

The LABS system has eight modules; while their purpose is consistent throughout different country models, the names may vary:

1. Market Scan
2. Curriculum Development
3. Mobilisation and Application
4. Induction and Life Skills
5. Technical Training
6. Work Readiness training
7. Job Placement
8. Post Placement Evaluation

The market scan ensures that the programme will have relevance and impact, and also ensures the identification of employers for engagement in industries with skills needs. At present curricula is restricted to four areas (Hospitality, Food & Beverage, Sales & Marketing, and IT), although there is scope to move beyond these industries where there is need. Young people are engaged and given training in the life skills they may need, for example in reproductive health, followed by the technical training relevant to their future job. The training institution will also give training in work readiness skills, including punctuality, workplace behaviour and communication. Trainees are then placed in jobs with the employers engaged at the outset of the process, and are evaluated six months after graduation to assess progress.

\(^{130}\) Field research in Indonesia, October 2013

\(^{131}\) Field research in Vietnam, October 2013

\(^{132}\) Field research in Indonesia, October 2013

\(^{133}\) Field research in Thailand, September 2013

\(^{134}\) Figures from Plan International interview, Bangkok October 2013

\(^{135}\) Ibid.
Contributing factors for success include the ability of the model to address and enable the ambitions of young people; and the fact that the teaching staff (facilitators) are all still working in their relevant industry, ensuring that the skills taught are relevant in a work context. The challenges to date for Plan have included ways to access and engage rural communities, and areas with a lack of economic opportunity. Another key restriction is the fact that curricula is developed according to need in each country; there is no centrally-held repository of core curricula, which could be adapted for local needs. With the advent of an e-learning platform for LABS in May 2014, it is likely that flexible curricula for a number of industries could be developed, and that learning materials could be shared between facilitators in all institutions offering LABS-style programmes.

9.2 Integration

An objective of this project was to assess the potential for integration between YES programmes and the Climate Change Adaptation (CCA) programmes run by Plan; the research has indicated that there is likely to be significant benefit to both programmes from integration, primarily using the LABS model.

9.2.1 Integrating LABS into CCA programmes

Under the current CCA model, communities are engaged by Plan and assisted to identify the key areas of climate change impact; together, they then develop projects, for which seed funding is provided, to facilitate adaptation to the effects of climate change. One shortcoming of this model, however, is the lack of focus on young people in rural areas, many of whom migrate for work due to lack of employment opportunities; there is also the assumption that young people will continue in the traditional work areas of their village.

By expanding the impact assessment model to incorporate specific modules of the LABS model, it may be possible to give young people a choice in their future career, while still ensuring employment. This could be as follows:

- When assessing communities for CCA impact assessment interventions, a parallel market scan on the employment trends and gaps for the area could also be performed. This could identify large employers and engage them.
- Communities, particularly young people, could be asked to consider their training needs and ambitions, relevant to the employment opportunities that are available.
- Curricula could be taken from a central Plan repository and modified to meet local needs.
- The method of training delivery would also be a key factor at this point, it should be noted, particularly in areas where there are no training institutions, as the training delivery would likely be from a Plan facilitator or, better still, in a peer-to-peer model.
- Placement would occur with employers, and post-placement evaluation six months later.

In villages and communities where there are no employment opportunities, and skills gaps are related to agricultural needs, training could be developed and delivered in the relevant areas. Utilising LABS-style skills gap analysis would ensure that any training developed and delivered is according to the specific needs of the community. There is also potential for flexible curricula to be developed for adaptation and delivery by the communities themselves in a peer-to-peer learning model.

9.2.2 CCA into the LABS model

A key finding of this research is that young people do not have a clear understanding of what climate change is, and what the difference between mitigation and adaptation is. Most significantly, many young people do not understand the importance of green skills and environmentally aware behaviour for themselves, their community and their prospective employers. Integrating environmental skills into the LABS model may help to raise the level of awareness amongst young people and, by transmission, to their families and communities.

To date, green skills have not formed a formal part of the curricula in the LABS training modules, but a number of teachers and institutions interviewed as part of field research indicated that it would be a welcome addition. Additional curricula could involve training sessions similar to those run by Live and Learn in Vietnam, which focused not only on giving young people information about the environment, but also engaging young people in trying to understand the impacts to their own lives and communities, and identifying behaviours that could mitigate impact.

Key areas for consideration include:

- Developing training sessions or modules that are flexible enough to be tailored to local contexts.
- Ensuring young people are motivated to understand the impact of climate change on their own lives.
- Ensuring that teachers and facilitators are similarly engaged and trained.

Partner NGOs providing training in environmental issues, such as Live and Learn, may assist in providing material that can be stored and shared on the e-learning portal.
10. Conclusions and Recommendations

10.1 Key Findings

From the research, we have drawn the following key findings. These findings have been used to develop recommendations and key action items, in the subsequent sections.

- There is significant confusion around terminology regarding green jobs and green skills amongst the majority of stakeholders interviewed as part of this project.

- Green Skills can be understood as the knowledge and skills needed to live and work in an environmentally responsible way.

- National policies tend to focus more on promoting environmental technologies for export, rather than offering support for innovative approaches to meet domestic needs.

- For many rural young people seeking employment, the only option is to move to urban centres.

- Older community members are valuable training assets, particularly in engaging young people.

- Agricultural students would like the opportunity to use their skills and knowledge to help farmers in rural areas improve their techniques.

- For many students, working in an environmentally responsible way is important, but they do not know how to access the skills and knowledge they need.

- The primary preferred employment sectors for young people were catering, agriculture, business and education.

- There is a gender bias in many training programmes and expected career paths, with jobs being prescribed for boys and for girls.
• Across all countries of study, the sectors with the most potential for generating green jobs are: Agriculture, Forestry and Fishing; Energy; Services; and Construction.
• Green skills are not a priority for employers, but cost saving is; if the financial benefits of investing in green skills could be shown, more would be interested.
• Training content for green skills at local levels needs to include marketing and sales skills, to ensure that farmers are able to develop their business.
• While environmental awareness is sometimes delivered as part of training programmes, it is ad-hoc and informal.
• Training can be delivered effectively in the community; in the workplace; through apprenticeships and other placements; and in institutions.
• Teacher training is a significant gap, with the majority of teachers feeling ill-equipped to deliver training in green skills.
• The LABS model is relatively unique in terms of giving young people choice over their career pathways, and providing employment opportunities to suit.

10.2. Recommendations for Green Skills Development

While the most common definitions of green jobs focus on climate change mitigation activities, which are not the focus of Plan's work, it is our conclusion that Plan can effect significant impact in the area of green skills, directly relevant to the livelihoods of young people. From the research, we believe that there are three main areas of green skills development that Plan can focus on:

1. Enabling those in rural areas affected by climate change to learn new skills in agriculture, to preserve their livelihoods.
2. To integrate elements of YEE into CCA programmes to enable young people in areas affected by climate change to train in alternate livelihoods with employment prospects.
3. To integrate knowledge from CCA programmes into the common YEE curricula, to ensure that students receive basic environmental awareness, which will then cascade into their eventual workplace.

Each of these recommendations is explored in further depth as follows:

10.2.1 Delivering Agricultural Skills Training

There are many areas in which Plan can successfully contribute to the development of green skills, both directly and indirectly. Agriculture is the sector affected most directly by climate change in the countries under consideration, and is also the sector where there is most potential for green jobs growth; as such, delivering or facilitating the delivery of training in agricultural skills could be the most direct way for Plan to assist young people in developing their livelihoods.

There are two main routes through which agricultural skills training could be developed and delivered: through community-based training; and through the delivery of curricula by partner training institutions (such as REACH in Vietnam) - currently primarily in urban centres, but potentially also in rural areas. In order to ensure consistency, it would be recommended that a core curriculum is developed, focusing on new techniques in agriculture and ways to address the impacts of climate change. Ensuring that the curriculum is flexible, and can be adapted to the different needs of communities and regions, is also crucial.

With both training modes, ensuring that a significant proportion of training is delivered practically is essential for improving understanding. Within the area of CCA/green skills, it may also play an important role in driving mindset change, in terms of local communities understanding the relevance of initiatives to their livelihoods. Programmes delivered within institutions using the LABS model ensure that practical and theoretical skills are balanced, and that students are given appropriate work placements.

Delivery of agricultural skills training at a community level could be performed in a number of ways: peer to peer knowledge dissemination, a community-based learning centre, or even the utilisation of agriculture students or graduates to teach short courses. In discussions with agriculture students in Vietnam, there was a strong desire on the part of students to use their knowledge about agricultural techniques to assist communities in coping with the impact of climate change. It may also be worth exploring the potential for such teaching experience to count towards students’ grades, or to be used as a form of work experience.

A significant finding from the research is that older people in rural, agricultural communities are limited by two factors: (a) a lack of knowledge and therefore ability to diversify into more sustainable crops, and (b) city migration of younger members of the community. It was also discovered that many successful programmes and initiatives utilise the seniority
of older community members and the respect in which they are held, to drive change. While Plan’s focus is on children and young people, we believe that it may be useful to include older people in training initiatives, as a way of engaging young people. Older community leaders are more likely to encourage young people to participate in training, and also to provide support in the form of mentoring.

Introducing agricultural skills into partner training institutions is likely to be a long-term objective, given that these institutions tend to be based in urban centres, and are not necessarily set up to teach (or provide practical experience in) agricultural skills. Developing partnerships with training institutions in areas experiencing significant levels of impact to agricultural production may be a way to introduce curricula focusing on the development of new skills and techniques; introducing theoretical training programmes into urban institutions, with placements in rural areas for work experience, may also be a solution.

Key actions include:

- The development of flexible curricula on new agricultural techniques and skills.
- Investigating partnerships with universities to encourage agricultural students and graduates to undertake community placements.
- Engaging community leaders to drive the engagement of young people and to deliver mentoring support.
- Developing partnerships with rural training centres to deliver agricultural skills curricula.

10.2.2 Using LABS Methodology for CCA Programmes

An interesting finding from the research is that the LABS model, as used by Plan, is relatively unique in terms of enabling young people to pursue the career pathways that they want, while other initiatives and programmes have focus on development of the value chain, meaning that the choices of young people are prescribed. We also discovered that young people have strong ideas about their ideal career and ambitions, but often do not know how to go about pursuing their goals in education or employment; similarly, young people from rural areas wish to remain in their home towns, but do not feel that they can find a job.

From these findings, we believe that Plan can integrate aspects of the YEE and CCA programmes to improve employment prospects for young people in areas affected by climate change. As discussed in Section 9.2, the most relevant parts of the LABS model, as used in the YEE programme, are the market scan methodology, which identifies the economic needs of the local area or region; and employer engagement, which identifies the exact needs of local employers, and ensures that jobs will be available to graduates. In situations where young people wish to remain in agriculture, training could also be delivered or signposted (as per the previous recommendation) in new techniques and technologies.

The integration of YEE and CCA programmes may yield significant benefits to both sets of programmes, as discussed in Section 9; it should be highlighted, however, that the market demand for this - as expressed by employers and young people - is low in many areas, and may need to be stimulated by Plan’s activities. We found little evidence of employer engagement in climate change adaptation and, more generally, in the wider training agenda. Where it was present, it was generally to meet legislative expectations, rather than any acknowledgment of the need for a structural change in the way in which employment links with environmental sustainability. There is a need to articulate the environmental and climatic challenges in financial formats where possible to gain greater engagement from employers as to the benefits of ‘greening’ jobs.

The addition of specific LABS methodologies to CCA impact studies with communities will ensure that skills training programmes are offered which are relevant to those needed. It will also ensure that communities and employers are engaged, and that young people have the ability to choose their own careers, whether in upgrading their agricultural skills or seeking new employment pathways. Curricula for training modules can either be taught by local institutions, in regions or urban areas, or through peer-to-peer learning in smaller communities. It may also be possible to access teaching resources, as discussed earlier in the section, in the form of agricultural graduates.

Key actions include:

- Working with the YEE team to develop a modified version of the market scan methodology to be used in CCA community work.
- Developing linkages with local training institutions.
- Engaging local employers to identify available jobs and also to secure post-training employment.
- Engaging agricultural students or trainers to deliver community training, where required, on new agricultural technologies and techniques.
10.2.3 Integrating Green Skills into YEE Programmes

One of the most striking findings of the research with young people was the fact that there was very low understanding of climate change, or even basic environmental awareness. It is a key conclusion of the research that one of the most pertinent action items, and possibly the area that could yield the most positive long-term impact, is the provision of environmental awareness to young people. Plan is already delivering effective work in this area, both in its own programmes and through partner organisations such as Live and Learn. Integration of such knowledge into other programmes, however, such as YEE, would also yield significant positive impact.

By integrating environmental knowledge, both general and job-specific, into the existing YEE programme, trainees will be able to develop green skills that will benefit not only themselves, but also their future employers and their communities. As discussed in Section 9, there is significant scope to include CCA modules within existing YEE structures: while the current LABS curricula currently focuses on four course subjects (Hospitality, Food & Beverage, Sales & Marketing, and IT), and entrepreneurship training, there is scope to develop additional curricula based on skills needs. The green elements within the existing curricula are informal and ad-hoc; there is significant potential to include a formal module on environmental awareness and climate change adaptation methods.

While formal accreditation and certification should be a long-term ambition in terms of enhancing employability, anecdotal interview and focus group evidence from across the region suggests that it is not currently a priority among employers. Time spent working in the field and demonstrating competency were the most important factors. When developing projects, efforts may therefore be better suited to ensuring that skills are directly relevant to the needs of industry and local economies, rather than to some external standard, such as international comparability.

Building teachers’ skills in this area is also a key challenge; it is likely that the LABS model will also need to include supplementary training material for teachers. With the e-learning platform that will be launched by Plan in 2014, it will be possible for teachers to share resources relevant to environmental awareness. It will be critical, however, to ensure that the language used is appropriate and the engagement methods targeted at young people.

Key actions include:

- Working with the CCA team to develop a core curricula on environmental awareness.
• Building CCA modules into relevant parts of each training curricula.
• Providing teacher training in green skills and ensuring that resources are available online.

10.3 Other Recommendations

Other recommendations, more broadly linked to raising awareness of green skills, include the use of consistent terminology around green skills; articulating the benefits of green skills and greening jobs; and raising awareness at policy levels.

10.3.1 Use of consistent terminology

As outlined in Section 3, there is some overlap in the way that people understand concepts related to climate change mitigation and climate change adaptation. They are not phrases which are widely understood; nor, for that matter, are ‘green skills’ and ‘green jobs’. The language focus in many cases might be more appropriately linked into issues related to CCA and its outcomes, such as changing weather patterns, disaster mitigation and food security. It is likely that Plan will need to develop working definitions that differentiate between climate change mitigation and adaptation activities in language that is easily understandable by young people.

10.3.2 Articulating the benefits of green skills

While there is a good deal of research and evidence into the green economy and green jobs, there is little evidence as to the economic and social benefits of developing more generic green skills, and of greening jobs in all sectors. This may include assessing the benefits to employers of having staff that work in an environmentally responsible way (i.e. saving energy and reducing waste), and of refining business activities to have less environmental impact. While it may be outside Plan’s remit and capacity to conduct such research, it would be beneficial for Plan to encourage other organisations to do so; providing a financial incentive for employers to value green skills and knowledge is likely to make engagement work much more successful.

10.3.3 Raising awareness at policy level

There appears to be an either/or mentality around the greening of the economy in many areas, with a perception that the creation of a green economy will take away from the existing economy, which is not feasible due to existing levels of resources and unemployment. Identifying approaches through which green skills have effectively been integrated as a growth strategy is essential for policy makers. Thailand may be a good reference point for catalysing change; the Government has, for example, driven consumer demand for organic produce by supporting traders and producers, as well as increasing attention on the agricultural sector and its value within the national economy.

The presence of distinctive policies targeting youth employment, green skills and climate change adaptation is a prerequisite for coherent delivery of the multitude of approaches and levellers which are required to begin to address these issues. In general, these policies are piecemeal or at an early stage of development in the countries studied. There is a need to focus on policy development in these areas at both national and district levels, and to ensure that national and local priorities are not in conflict. Co-ordination between ministries is also something which should be advocated. This is inherently difficult because of the cross-sectoral nature of climate change and youth employment. The presence of a climate change master plan in Thailand is clearly a significant step forward and may assist with co-ordination between different ministries, offering a distinctive lens through which procurement or legislation may be viewed.

In each of the countries of study, it is clear that the impact of climate change is being felt most in rural areas; this is in line with the broader literature and relates to generally higher poverty levels in rural areas and less resilience to economic shocks. A significant amount of policy initiatives are being targeted in urban areas, however; presumably because these areas are more accessible and projects and programmes cost relatively less to run as a result. This approach contributes, however, to the divide between rural and urban outcomes, including in education, in the study countries, and means that young people in rural areas are less equipped to deal with the impacts of climate change.

In addition to awareness raising at the policy level, multi-level engagement strategies as a whole are essential in driving change in mindsets and improving sustainability. The Community-based Adaptation to Climate Change project in Vietnam, which ran workshops from the community level up to policy makers, was effective in doing this. Driving media attention to projects operating in this space is important.

10.4 Suggested Action Items

As initial points of action, we would recommend the following:

• Developing flexible curricula on:
  • New agricultural techniques and skills.
  • General environmental awareness and climate change.
• Investigating partnerships with:
  • Universities to encourage agricultural students and graduates to undertake community placements.
  • Rural training centres to deliver agricultural skills curricula.
• Engaging community leaders to drive the engagement of young people and to deliver mentoring support.
• Developing a modified version of the market scan methodology to be used in CCA community work.
• Providing teacher training in green skills and ensuring that resources are available online.
• Ensuring that terminology and messages regarding green skills are consistent.
• Developing policy and advocacy work around green skills, and emphasising the need for further research.
Appendix 1: Country-Specific Recommendations

The following recommendations have been drawn from the country-specific research, which is available in standalone reports. Some of the key recommendations are applicable to all countries, and so have been included under each.

Indonesia

Integrating green skills into the LABS model

In order to increase the adaptive capacity of young people to climate change, awareness-raising on climate change and training in climate resilient livelihoods should be incorporated into Plan’s existing Youth Economic Empowerment programme in one or more curriculum area. In the existing model (LABS), young people are given pre-employment and specific skills training, and employers are engaged to ensure post-training employment and that the labour supply that is being provided matches what is required. Integrating training on climate resilient livelihoods into this LABS model would provide a good pilot project to integrating green skills into youth vocational training that can be rolled out across all programme areas. The existing programme framework can also be used for project monitoring. As noted in Section 8, very few programmes directly link CCA and YEE, or indeed pay sufficient attention to gender considerations; incorporating CCA and green skills training with the existing YEE programme would enable Plan to set the standard for climate-aware youth vocational training.

Tailoring training to regional needs

Research suggested that skills training should be specific to regions and should use local people to report on climate change impacts in their respective areas. In planning for specific vocational activities related to green skills, training programmes should take account of appropriate alternative livelihood activities by region; this is an activity that is already utilised in the LABS model. In those programme areas defined as primarily agricultural, attention should be given to training in techniques for more climate resilient agriculture practices, such as the use of organic fertiliser, and supporting the rural ‘off-farm’ economy. Plan should consult existing programmes focusing on climate-adaptive livelihoods in agriculture, forestry and coastal hazards, including CARE’s Building Coastal Resilience to Reduce Climate Change Impact Programme, for areas of good practice in delivering training at the community level.

Flexible curricula

By utilising the LABS model at community levels to understand the training and employment needs of young people, appropriate learning pathways that will lead to employment will be understood. It is likely that in many communities experiencing the effects of climate change, pathways and employment needs will be the same. By developing flexible curricula in key areas (not limited only to the existing hospitality, marketing and tourism subjects), Plan will be able to build a bank of learning materials that can be tailored to communities as required, and may also serve to ensure that the required quality of training is being delivered in each country.

Targeting youth networks

Youth networks and groups should be targeted as prime forums for dissemination of information about climate change adaptation. They also provide a space for young people to come together and discuss relevant issues, allowing them to find creative solutions to issues affecting them. Implementing CCA and YES programmes will also require a fuller understanding of the career aspirations of young people, if they are to be successful. It is essential that Plan engages with existing local youth networks when introducing green skills training. This would allow Plan to more fully understand youth priorities and provide a forum for awareness-raising activities.

Utilising the influence of community elders

In rural areas village elders retain the most authority over community matters. It is therefore vital that Plan engage these leaders when initiating any climate change awareness programmes at the local level. This would ensure better community buy-in to new CCA techniques that may be passed on by young people who have attended youth vocational and CCA training.

Sharing good practice with NGOs

There should be greater collaboration between NGOs to assess good practice and programme impact to ensure successful programmatic approaches to green skills training amongst young people. There is a good opportunity for Plan to instigate lesson-learning and sharing between programmes in Indonesia (and, indeed, within the region) by forming a working group with other NGOs working in climate change and youth economic empowerment. Discussions should focus on good practice, challenges, such as engaging stakeholders in facilitation activities, the targeting of beneficiaries and delivery models.
Focusing on raising gender issues
There is a clear lack of discussion around gender in green skills and youth vocational programmes. There is a good opportunity for Plan to be a thought leader in collaborative discussions on this issue, having already initiated a youth economic empowerment programme with young women. It is also possible that, through working in communities, Plan may directly influence the levels of access young women have to training and employment opportunities.

Engaging with the existing policy framework
Policy makers interviewed called for greater collaboration with NGOs to ensure that young people can gain the relevant green skills. Plan should ensure closer working with government departments in order to tie in with the existing climate change policy network. There is a good an opportunity to influence the CCA policy framework by engaging with the Government’s climate change network on the development and implementation of the National Action Plan for Climate Change Adaptation (RAN-API). In this way, Plan could ensure that the ‘youth voice’ is heard and that activities specifically related to livelihood resilience include initiatives directed at young people. Finally, the ICCTF, as a multi-donor financing tool, may additionally be a potential source of support or funding for future green skills action at community level for Plan.

Green entrepreneurship
Greening small entrepreneurship should also be a primary focus of training, as well as providing information on vocational paths working in industries directly related to the environment such as in renewable energy and eco-tourism. Existing programmes working in these areas, such as the ILO’s Green Jobs in Asia Project, should be consulted for effective training practices and links with industry.

Mapping of existing vocational training providers
Plan should attempt to engage with existing vocational training providers and organisations working in YEE, such as the ILO, in the geographical programme areas in which it operates. In this way, Plan will be better placed to identify gaps in vocational training and indeed initiate discussions regarding the incorporation of green skills into training. Those vocational training providers with links to the business world will also be best placed to offer advice on skills gaps and training needed. This would allow Plan to integrate green skills training into subjects of high demand, such as business, marketing and agricultural technology.

Myanmar
Integrating green skills into the LABS model
In order to increase the adaptive capacity of young people to climate change, awareness-raising on climate change and training in climate resilient livelihoods should be incorporated into Plan’s existing Youth Economic Empowerment programme in one or more curriculum area. In the existing model (LABS), young people are given pre-employment and specific skills training, and employers are engaged to ensure post-training employment and that the labour supply that is being provided matches what is required. Integrating training on climate resilient livelihoods into this the LABS model would provide a good pilot project to integrating green skills into youth vocational training that can be rolled out across all programme areas.

Tailoring training to regional needs
In planning for specific vocational activities related to green skills, training programmes should take account of appropriate alternative livelihood activities by region. In those programme areas defined as primarily agricultural, attention should be given to training in techniques for more climate resilient agriculture practices, such as the use of organic fertiliser, and supporting the rural ‘off-farm’ economy.

Flexible curricula
Although many training programmes are in line with the Government curriculum, there has been some success with a more flexible model (see CDEC). Tailoring curricula in collaboration with participants, employers and communities may prove more effective in ensuring the most relevant skills are provided. This could be done with local market assessments (industry demand) and research into trainees’ existing skills and requirements. With such fast changes taking place through current reform, a rigid curriculum may quickly become outdated.

Targeting youth networks
Youth networks and groups should be targeted as prime forums for dissemination of information about climate change adaptation. They also provide a space for young people to come together and discuss relevant issues, allowing young people to find creative solutions to issues affecting them. Implementing CCA and YES programmes will also require a fuller understanding of the career aspirations of young people, if they are to be successful. It is essential that Plan engages with bodies such as the Myanmar Youth Forum and Myanmar Youths in Action when introducing green skills...
training. This would allow Plan to more fully understand youth priorities and provide a forum for awareness-raising activities.

Engaging community leaders

With community leaders being engaged in some of the key programmes providing green and other vocational skills, it is clear that this stakeholder group has significant influence. As such, community leaders should be approached as a matter of course before engaging with villages. Community leaders can ensure that the language used is correct and appropriate, that the relevant issues are highlighted and addressed and that the villagers themselves can trust the process of introducing new skills. Monks are also highly regarded in rural areas and seen as influential. It is therefore vital that Plan engage these stakeholders when initiating any climate change awareness programmes at the local level. Peer to peer training on certain green issues has also proved an effective, and efficient, means of sharing knowledge. This is most valuable in the context of rural villages, sometimes with distinct languages and cultures, and best approached by those already familiar with it. This also resolves any language issues (many languages are spoken in Myanmar).

Targeting rural youth

It is also essential that Plan targets young people in rural areas for training. This should include those young people who are obliged to emigrate for work. Ensuring that such migrants are equipped with the relevant skills would not only empower individuals, but help support the communities they leave behind. Training provisions should be in line with those of the ASEAN countries to ensure skills are recognised internationally. Where young people in rural areas are seeking to migrate to find work, such as where raw materials are produced and sold, any opportunities to create value chains should also be explored. This might include food processing or small-scale manufacturing (such as handicrafts), which could include a focus on green skills.

Sharing good practice with NGOs

As there is to date no operational YEE programme in Myanmar, Plan should engage with other NGOs working in the field, such as ActionAid and One Young World, in order to better understand the YEE landscape and successful programmatic approaches to green skills training amongst young people. Being a nascent sector, this would be a good opportunity for Plan to instigate lesson-learning and sharing between programmes in Myanmar.

Engaging the private sector

Vocational training certification reportedly has no influence over employers in Myanmar. There is therefore a need for Plan to engage with the private sector in order that buy-in is sought and that skills being taught are appropriate and relevant. Due to the fact that employers place so much emphasis on practical work experience, it would additionally be useful to garner links with businesses who may be able to offer work experience placements. Working with employers throughout training may help give them ownership of the process and instil greater value in qualifications. Ongoing, on-the-job training should also be encouraged to maintain standards and update and refresh skills. There is also some concern that a focus on green skills (and jobs) may be to the detriment of other areas. Although the language of climate change appears to be widely understood in Myanmar, it may be important to focus on the needs of employers in terms of green skills, rather than green skills in isolation. This would ensure that any training provision would be perceived as relevant and not an unnecessary qualification.

Mapping of existing vocational training providers

Plan should attempt to engage with existing vocational training providers and organisations working in YEE, such as the ILO, in the geographical programme areas in which it operates. In this way, Plan will be better placed to identify gaps in vocational training and indeed initiate discussions regarding the incorporation of green skills into training. Those vocational training providers with links to the business world will also be best placed to offer advice on skills gaps and training needed. This would allow Plan to better integrate green skills training into subjects of high demand, such as business, marketing and agricultural technology.

Thailand

Integrating green skills into the LABS model

In order to increase the adaptive capacity of young people to climate change, awareness-raising on climate change and training in climate resilient livelihoods should be incorporated into Plan’s existing Youth Economic Empowerment programme in one or more curriculum area. In the existing model (LABS), young people are given pre-employment and specific skills training, and employers are engaged to ensure post-training employment and that the labour supply that is being provided matches what is required. Integrating training on climate resilient livelihoods into this the LABS model would provide a good pilot project to integrating green skills into youth vocational training that can be rolled out across all programme areas. The existing programme framework can also be used for project monitoring. As noted in Section 8, very few programmes directly link CCA and YEE, or indeed pay sufficient attention to gender
considerations; incorporating CCA and green skills training with the existing YEE programme would enable Plan to set the standard for climate-aware youth vocational training.

Tailoring training to regional needs

Research suggested that skills training should be specific to regions and should use local people to report on climate change impacts in their respective areas. In planning for specific vocational activities related to green skills, training programmes should take account of appropriate alternative livelihood activities by region; this is an activity that is already utilised in the LABS model. In those programme areas defined as primarily agricultural, attention should be given to training in techniques for more climate resilient agriculture practices, such as the use of organic fertiliser, and supporting the rural ‘off-farm’ economy. It was also indicated by employers in Thailand that there were employment opportunities available in rural areas, due to the prevalence of young people leaving their jobs to establish their own businesses.

Flexible curricula

By utilising the LABS model at community levels to understand the training and employment needs of young people, appropriate learning pathways that will lead to employment will be understood. It is likely that in many communities experiencing the effects of climate change, that the pathways and the employment needs will be the same. By developing flexible curricula in key areas (not limited only to the existing hospitality, marketing and tourism subjects), Plan will be able to build a bank of learning materials that can be tailored to communities as required, and may also serve to ensure that the required quality of training is being delivered in each country.

Targeting youth networks

Youth networks and groups should be targeted as prime forums for dissemination of information about climate change adaptation. They also provide a space for young people to come together and discuss relevant issues, allowing young people to find creative solutions to issues affecting them. Implementing CCA and YES programmes will also require a fuller understanding of the career aspirations of young people, if they are to be successful. It is essential that Plan engages with existing local youth networks when introducing green skills training. This would allow Plan to more fully understand youth priorities and provide a forum for awareness-raising activities.

Village-based training

Young people in Thailand believed that green skills could have a significant positive impact on their villages, and may directly help to reduce employment-driven migration. It is likely that engaging young people at village level, and focusing on the benefits to them and their community, would be a successful approach. It is also important to engage the community at all levels, particularly village elders, who in rural areas retain the most authority over community matters. It is therefore vital that Plan engage these leaders when initiating any climate change awareness programmes at the local level. This would ensure better community buy-in to new CCA techniques that may be passed on by young people who have attended youth vocational and CCA training.

Developing urban initiatives

There is a predominance of programmes focused on disadvantaged youth in rural areas; very few in Thailand were evident at an urban level. Given that climate change adaptation activities are also required in urban areas, particularly in adapting techniques within jobs (such as tourism or catering), it may also be worthwhile investigating the potential of offering LABS-style training through urban institutions.

Sharing good practice with NGOs

There should be greater collaboration between NGOs to assess good practice and programme impact to ensure successful programmatic approaches to green skills training amongst young people. There is a good opportunity for Plan to instigate lesson-learning and sharing between programmes in Indonesia (and, indeed, within the region) by forming a working group with other NGOs working in climate change and youth economic empowerment. Discussions should focus on good practice, challenges, such as engaging stakeholders in facilitation activities, the targeting of beneficiaries and delivery models.

Mapping of existing vocational training providers

Plan should attempt to engage with existing vocational training providers and organisations working in YEE, such as the ILO, in the geographical programme areas in which it operates. In this way, Plan will be better placed to identify gaps in vocational training and indeed initiate discussions regarding the incorporation of green skills into training. Those vocational training providers with links to the business world will also be best placed to offer advice on skills gaps and training needed. This would allow Plan to better integrate green skills training into subjects of high demand, such as business, marketing and agricultural technology.
Vietnam

Integrating green skills into the LABS model

In order to increase the adaptive capacity of young people to climate change, awareness-raising on climate change and training in climate resilient livelihoods should be incorporated into Plan’s existing Youth Economic Empowerment programme in one or more curriculum area. In Vietnam, the REACH model (utilising the LABS methodology) has proven successful in engaging and training young people in areas where employment is available. To date, the green content in the curriculum has been limited and ad-hoc. By introducing green skills training, incorporating climate change awareness and mitigation strategies, young people will be able to discern the impact to their own future careers.

Using LABS in rural areas

While the REACH model has been very successful in urban centres in Vietnam, there has been little development using the model in rural areas. It may be possible to introduce the model to institutions offering informal training in local areas, to ensure that market supply and demand are balanced, or even to integrate the market scan and employer engagement methodology into existing CCA consultation projects at community level. By giving communities the skills to identify the skills needed in their environment and by any local industry or employers, they will be able to identify alternate pathways for employment where needed, or additional skills required to adapt their existing jobs to climate change.

Youth-led training

Young agricultural students from rural areas expressed a desire to return to their home regions and teach their communities new technologies and practices that may help farmers combat the effects of climate change. It does not appear that young agriculture students have been used as training resources in this way before, and it may be useful for Plan to investigate the possibility of engaging them and using them as part of any community CCA training.

Flexible curricula

By utilising the LABS model at community levels to understand the training and employment needs of young people, appropriate learning pathways that will lead to employment will be understood. It is likely that in many communities experiencing the effects of climate change, that the pathways and the employment needs will be the same. By developing flexible curricula in key areas (not limited only to the existing hospitality, marketing and tourism subjects), Plan will be able to build a bank of learning materials that can be tailored to communities as required, and may also serve to ensure that the required quality of training is being delivered in each country.

Targeting youth networks

Youth networks and groups should be targeted as prime forums for dissemination of information about climate change adaptation. They also provide a space for young people to come together and discuss relevant issues, allowing young people to find creative solutions to issues affecting them. Implementing CCA and YES programmes will also require a fuller understanding of the career aspirations of young people, if they are to be successful. It is essential that Plan engages with existing local youth networks when introducing green skills training. This would allow Plan to more fully understand youth priorities and provide a forum for awareness-raising activities. In Vietnam, the existing structure of youth networks, such as the Youth Union, provides a natural framework for introducing climate change information to young people. Popular brands such as Boo Fashion also engage young people in environmental activities and behaviour.

Training the trainers

One of the key issues in Vietnam is the teachers’ reluctance to offer green training, because of their own lack of knowledge on the subject. Developing a short course pack for teachers to access, and including examples of learning material that can be used in classes, could be a good way of ensuring that teachers are transmitting relevant and correct information to their students. Live and Learn demonstrated excellent methods of introducing complex climate change issues to young people in the focus groups we observed, and also use innovative tools such as animated videos; these may be shared with teachers as resources for them to use in their classes.

Sharing good practice with NGOs

There should be greater collaboration between NGOs to assess good practice and programme impact to ensure successful programmatic approaches to green skills training amongst young people. There is a good opportunity for Plan to instigate lesson-learning and sharing between programmes in Vietnam (and, indeed, within the region) by forming a working group with other NGOs working in climate change and youth economic empowerment. Discussions should focus on good practice, challenges, such as engaging stakeholders in facilitation activities, the targeting of beneficiaries and delivery models.
Appendix 2: Survey Results

Online surveys were carried out with young people in South East Asia using the SurveyMonkey platform; the survey was adapted from one already in use by Plan Thailand. A general survey link was issued in English; translated versions were made available in Thailand and Vietnam. It should be noted that the response rate from Vietnamese youth was significantly higher than from other countries, comprising 69% of respondents. Survey respondents by age group and level of education are noted in the tables below. The majority of survey participants (62%) were studying at university level; just over a third were enrolled in high school.

Survey respondents by age group (%)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>16 or below</th>
<th>17-18</th>
<th>19-20</th>
<th>21-22</th>
<th>23 or above</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male (n=99)</td>
<td>0.4</td>
<td>0.4</td>
<td>3.3</td>
<td>8.2</td>
<td>28.2</td>
<td>40.4</td>
</tr>
<tr>
<td>Female (n=146)</td>
<td>1.2</td>
<td>4.1</td>
<td>13.5</td>
<td>18.4</td>
<td>22.4</td>
<td>59.6</td>
</tr>
<tr>
<td>Total (n=245)</td>
<td>1.6</td>
<td>4.5</td>
<td>16.7</td>
<td>26.5</td>
<td>50.6</td>
<td>100</td>
</tr>
</tbody>
</table>

Level of education completed

<table>
<thead>
<tr>
<th>Education level</th>
<th>Male %</th>
<th>Female %</th>
<th>Total % respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>25.9 (n=7)</td>
<td>74.1 (n=20)</td>
<td>11</td>
</tr>
<tr>
<td>Secondary</td>
<td>33.3 (n=11)</td>
<td>66.7 (n=22)</td>
<td>13.5</td>
</tr>
<tr>
<td>High school</td>
<td>25.3 (n=22)</td>
<td>74.7 (n=65)</td>
<td>35.5</td>
</tr>
<tr>
<td>Vocational high school</td>
<td>40 (n=2)</td>
<td>60 (n=3)</td>
<td>2</td>
</tr>
<tr>
<td>College</td>
<td>46.2 (n=6)</td>
<td>53.8 (n=7)</td>
<td>5.3</td>
</tr>
<tr>
<td>University</td>
<td>46.7 (n=71)</td>
<td>53.3 (n=81)</td>
<td>62</td>
</tr>
<tr>
<td>Other</td>
<td>33.3 (n=6)</td>
<td>66.7 (n=12)</td>
<td>7.3</td>
</tr>
</tbody>
</table>

Understanding of term ‘green skills’ by gender and total respondents

<table>
<thead>
<tr>
<th>Understanding</th>
<th>% total respondents</th>
<th>Male %</th>
<th>Female %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skills which help you to reduce your impact on the environment (n=80)</td>
<td>32.7</td>
<td>48.8</td>
<td>51.2</td>
</tr>
<tr>
<td>Skills which help you to reduce your employer’s impact on the environment (n=121)</td>
<td>49.4</td>
<td>40.5</td>
<td>59.5</td>
</tr>
<tr>
<td>Skills which help you to reduce your community’s impact on the environment (n=82)</td>
<td>33.5</td>
<td>47.6</td>
<td>52.4</td>
</tr>
<tr>
<td>Skills which enable you to adapt to climate change (n=55)</td>
<td>22.4</td>
<td>52.7</td>
<td>47.3</td>
</tr>
<tr>
<td>Skills which enable your employer to adapt to climate change (n=100)</td>
<td>40.8</td>
<td>34.0</td>
<td>66.0</td>
</tr>
<tr>
<td>Skills which enable your community to adapt to climate change (n=33)</td>
<td>13.5</td>
<td>57.6</td>
<td>42.4</td>
</tr>
</tbody>
</table>
### Understanding of term 'green skills' by age group

<table>
<thead>
<tr>
<th>Understanding</th>
<th>16 or below</th>
<th>17-18</th>
<th>19-20</th>
<th>21-22</th>
<th>23 or above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skills which help you to reduce your impact on the environment (n=80)</td>
<td>0</td>
<td>1.3</td>
<td>13.7</td>
<td>25.0</td>
<td>60.0</td>
</tr>
<tr>
<td>Skills which help you to reduce your employer's impact on the environment</td>
<td>0</td>
<td>5.0</td>
<td>21.5</td>
<td>26.4</td>
<td>47.1</td>
</tr>
<tr>
<td>(n=121)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skills which help you to reduce your community's impact on the environment</td>
<td>0</td>
<td>3.7</td>
<td>15.9</td>
<td>31.7</td>
<td>48.8</td>
</tr>
<tr>
<td>(n=82)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skills which enable you to adapt to climate change (n=55)</td>
<td>3.6</td>
<td>1.8</td>
<td>9.1</td>
<td>23.6</td>
<td>61.8</td>
</tr>
<tr>
<td>Skills which enable your employer to adapt to climate change (n=100)</td>
<td>1.0</td>
<td>4.0</td>
<td>18.0</td>
<td>36.0</td>
<td>41.0</td>
</tr>
<tr>
<td>Skills which enable your community to adapt to climate change (n=33)</td>
<td>0</td>
<td>3.0</td>
<td>0</td>
<td>15.2</td>
<td>81.8</td>
</tr>
<tr>
<td>Don't know (n=11)</td>
<td>0</td>
<td>9.1</td>
<td>0</td>
<td>9.1</td>
<td>81.8</td>
</tr>
</tbody>
</table>

### Understanding of term CCA by gender and total respondents

<table>
<thead>
<tr>
<th>Understanding</th>
<th>% total respondents</th>
<th>Male %</th>
<th>Female %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changing or diversifying your occupation to something that would be less at</td>
<td>26.5</td>
<td>43.1</td>
<td>56.9</td>
</tr>
<tr>
<td>risk of being negatively affected by changing climate (n=65)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reducing pollution from cars and other things that release greenhouse gases</td>
<td>33.1</td>
<td>32.1</td>
<td>67.9</td>
</tr>
<tr>
<td>(n=81)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning new agricultural techniques or planting different crops that are</td>
<td>44.1</td>
<td>32.4</td>
<td>67.6</td>
</tr>
<tr>
<td>more resistant to drought or saltwater (n=108)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installing an air conditioner to cope with heat waves (n=8)</td>
<td>3.3</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Moving away from coastal areas threatened by sea-level rise (n=25)</td>
<td>10.2</td>
<td>52</td>
<td>48</td>
</tr>
<tr>
<td>Having better disaster risk management in your community and workplace to</td>
<td>70.2</td>
<td>39.5</td>
<td>60.5</td>
</tr>
<tr>
<td>deal with more frequent, severe and unpredictable weather events (n=172)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don't know (n=4)</td>
<td>1.6</td>
<td>25</td>
<td>75</td>
</tr>
<tr>
<td>Other (n=4)</td>
<td>1.6</td>
<td>25</td>
<td>75</td>
</tr>
</tbody>
</table>
Understanding of term CCA by age group

<table>
<thead>
<tr>
<th>Understanding</th>
<th>16 or below</th>
<th>17-18</th>
<th>19-20</th>
<th>21-22</th>
<th>23 or above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changing or diversifying your occupation to something that would be less at risk of being negatively affected by changing climate (n=65)</td>
<td>0</td>
<td>4.6</td>
<td>12.3</td>
<td>18.5</td>
<td>64.6</td>
</tr>
<tr>
<td>Reducing pollution from cars and other things that release greenhouse gases (n=81)</td>
<td>2.5</td>
<td>6.2</td>
<td>16.0</td>
<td>28.4</td>
<td>46.9</td>
</tr>
<tr>
<td>Learning new agricultural techniques or planting different crops that are more resistant to drought or saltwater (n=108)</td>
<td>1.9</td>
<td>3.7</td>
<td>19.4</td>
<td>32.4</td>
<td>42.6</td>
</tr>
<tr>
<td>Installing an air conditioner to cope with heat waves (n=8)</td>
<td>0</td>
<td>0</td>
<td>12.5</td>
<td>50.0</td>
<td>37.5</td>
</tr>
<tr>
<td>Moving away from coastal areas threatened by sea-level rise (n=25)</td>
<td>4.0</td>
<td>4.0</td>
<td>20.0</td>
<td>24.0</td>
<td>48.0</td>
</tr>
<tr>
<td>Having better disaster risk management in your community and workplace to deal with more frequent, severe and unpredictable weather events (n=172)</td>
<td>1.2</td>
<td>4.7</td>
<td>18.6</td>
<td>27.9</td>
<td>47.7</td>
</tr>
</tbody>
</table>

Environmental skills used in daily life

- **Saving energy**
  - Total respondents: 184
  - Male %: 39.7
  - Female %: 60.3

- **Recycling**
  - Total respondents: 110
  - Male %: 41.8
  - Female %: 58.2

- **Reducing pollution**
  - Total respondents: 114
  - Male %: 36
  - Female %: 64

- **Saving water**
  - Total respondents: 161
  - Male %: 36.6
  - Female %: 63.4

![Bar chart showing environmental skills used in daily life]
### Environmental skills used

<table>
<thead>
<tr>
<th></th>
<th>% total respondents</th>
<th>Male %</th>
<th>Female %</th>
</tr>
</thead>
<tbody>
<tr>
<td>None (n=4)</td>
<td>1.6</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Other (n=11)</td>
<td>4.5</td>
<td>36.4</td>
<td>63.6</td>
</tr>
</tbody>
</table>

### Barriers to practising green skills at work and in daily life

<table>
<thead>
<tr>
<th>Barriers</th>
<th>% total respondents</th>
<th>Male %</th>
<th>Female %</th>
</tr>
</thead>
<tbody>
<tr>
<td>I do not believe they are important for me (n=1)</td>
<td>0.4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Lack of knowledge (n=81)</td>
<td>33.1</td>
<td>37</td>
<td>63</td>
</tr>
<tr>
<td>Lack of facilities (n=85)</td>
<td>34.7</td>
<td>38.8</td>
<td>61.2</td>
</tr>
<tr>
<td>The people that I live/work with do not worry about green skills (n=152)</td>
<td>62</td>
<td>39.5</td>
<td>60.5</td>
</tr>
<tr>
<td>I do not have time (n=15)</td>
<td>6.1</td>
<td>53.3</td>
<td>46.7</td>
</tr>
<tr>
<td>There is no place in my life/job for green skills (n=18)</td>
<td>7.3</td>
<td>33.3</td>
<td>66.7</td>
</tr>
<tr>
<td>Other (n=13)</td>
<td>5.3</td>
<td>46.2</td>
<td>53.8</td>
</tr>
</tbody>
</table>

### Interest in learning about ways to reduce the impact of climate change

<table>
<thead>
<tr>
<th>Male % (n=82)</th>
<th>Female % (n=119)</th>
<th>Total % (n=201)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>39.6</td>
<td>57.5</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>1.4</td>
</tr>
<tr>
<td>Don’t know</td>
<td>0.5</td>
<td>1</td>
</tr>
</tbody>
</table>

### Areas of Study

<table>
<thead>
<tr>
<th>Area of study</th>
<th>Male %</th>
<th>Female %</th>
<th>Total % (n=100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts and humanities</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Economics, business and management</td>
<td>14</td>
<td>35</td>
<td>49</td>
</tr>
<tr>
<td>Languages</td>
<td>6</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Science and mathematics</td>
<td>5</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>Social sciences</td>
<td>5</td>
<td>14</td>
<td>19</td>
</tr>
</tbody>
</table>

### ‘Green’ or environmental part of course of study

<table>
<thead>
<tr>
<th></th>
<th>Male % (n=44)</th>
<th>Female % (n=86)</th>
<th>Total % (n=130)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>6.9</td>
<td>23.8</td>
<td>30.8</td>
</tr>
</tbody>
</table>
### Extent to which studies include a range of environmentally sustainable skills

<table>
<thead>
<tr>
<th><strong>Part of the day-to-day course, % respondents</strong></th>
<th><strong>Elective or stand-alone subject, % respondents</strong></th>
<th><strong>Not offered at all, % respondents</strong></th>
<th><strong>Haven’t noticed, % respondents</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Water efficient practices (n=82)</td>
<td>37.8</td>
<td>24.4</td>
<td>31.7</td>
</tr>
<tr>
<td>Waste minimisation, recycling and reusing materials (n=82)</td>
<td>43.9</td>
<td>10.6</td>
<td>17.1</td>
</tr>
<tr>
<td>Minimising emissions from the transport of goods and people (n=82)</td>
<td>32.9</td>
<td>40.2</td>
<td>19.5</td>
</tr>
<tr>
<td>Avoiding hazardous or toxic materials where alternatives are available (n=82)</td>
<td>37.8</td>
<td>34.2</td>
<td>20.7</td>
</tr>
<tr>
<td>Energy efficient practices (n=80)</td>
<td>40.0</td>
<td>31.3</td>
<td>22.5</td>
</tr>
<tr>
<td>Understanding how your work affects local plants and animals (n=82)</td>
<td>39.0</td>
<td>37.8</td>
<td>18.3</td>
</tr>
<tr>
<td>Knowing where the materials you use come from (n=82)</td>
<td>32.9</td>
<td>41.5</td>
<td>18.3</td>
</tr>
</tbody>
</table>

### Usefulness of learning green skills as part of their course of study

<table>
<thead>
<tr>
<th><strong>Male % (n=44)</strong></th>
<th><strong>Female % (n=85)</strong></th>
<th><strong>Total % (n=129)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>28.7</td>
<td>61.2</td>
</tr>
<tr>
<td>No</td>
<td>5.4</td>
<td>2.3</td>
</tr>
<tr>
<td>Don’t know</td>
<td>0</td>
<td>2.3</td>
</tr>
</tbody>
</table>

### Ways in which people may have to adapt to climate change

<table>
<thead>
<tr>
<th><strong>Changing occupations (n=32)</strong></th>
<th><strong>Updating occupational skills or training (n=154)</strong></th>
<th><strong>Diversifying sources of income (n=77)</strong></th>
<th><strong>Moving to a different area (n=28)</strong></th>
<th><strong>Investing in insurance (n=22)</strong></th>
<th><strong>Don’t know (n=10)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male %</td>
<td>46.9</td>
<td>45.5</td>
<td>57.1</td>
<td>54.5</td>
<td>80</td>
</tr>
<tr>
<td>Female %</td>
<td>53.1</td>
<td>62.3</td>
<td>54.5</td>
<td>54.5</td>
<td>20</td>
</tr>
<tr>
<td>Total % of respondents</td>
<td>13.1</td>
<td>62.9</td>
<td>31.4</td>
<td>11.4</td>
<td>4.1</td>
</tr>
</tbody>
</table>
The best way to learn about green skills

<table>
<thead>
<tr>
<th></th>
<th>Male %</th>
<th>Female %</th>
<th>Total % of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other (n=11)</td>
<td>36.4</td>
<td>63.6</td>
<td>4.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Male %</th>
<th>Female %</th>
<th>Total % respondents (n=182)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
<td>11</td>
<td>15.4</td>
<td>26.4</td>
</tr>
<tr>
<td>Training workshop/conference</td>
<td>20.9</td>
<td>29.1</td>
<td>50</td>
</tr>
<tr>
<td>Newsletter</td>
<td>2.2</td>
<td>1.1</td>
<td>3.3</td>
</tr>
<tr>
<td>Internet</td>
<td>7.1</td>
<td>11.5</td>
<td>18.7</td>
</tr>
<tr>
<td>Don’t know</td>
<td>0.5</td>
<td>1.1</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Preferred future occupations
### Occupation Male % (n=71) Female % (87) Total % respondents (n=158)

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Male % (n=71)</th>
<th>Female % (87)</th>
<th>Total % respondents (n=158)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting/finance</td>
<td>3.2</td>
<td>2.5</td>
<td>5.7</td>
</tr>
<tr>
<td>Administrative</td>
<td>2.5</td>
<td>3.2</td>
<td>5.7</td>
</tr>
<tr>
<td>Agriculture</td>
<td>8.9</td>
<td>6.3</td>
<td>15.2</td>
</tr>
<tr>
<td>Building/construction</td>
<td>1.9</td>
<td>0</td>
<td>1.9</td>
</tr>
<tr>
<td>Business/management</td>
<td>9.5</td>
<td>8.2</td>
<td>17.7</td>
</tr>
<tr>
<td>Catering/hospitality</td>
<td>0.6</td>
<td>1.9</td>
<td>2.5</td>
</tr>
<tr>
<td>Charities</td>
<td>3.2</td>
<td>5.1</td>
<td>8.2</td>
</tr>
<tr>
<td>Design/media</td>
<td>2.5</td>
<td>10.1</td>
<td>12.7</td>
</tr>
<tr>
<td>Education</td>
<td>5.7</td>
<td>10.8</td>
<td>16.5</td>
</tr>
<tr>
<td>Engineering</td>
<td>2.5</td>
<td>3.8</td>
<td>6.3</td>
</tr>
<tr>
<td>Health</td>
<td>1.9</td>
<td>0.6</td>
<td>2.5</td>
</tr>
<tr>
<td>IT/software</td>
<td>0.6</td>
<td>1.3</td>
<td>1.9</td>
</tr>
<tr>
<td>Don't know</td>
<td>1.9</td>
<td>1.3</td>
<td>3.2</td>
</tr>
</tbody>
</table>

### Long term working plans

<table>
<thead>
<tr>
<th></th>
<th>Male % (n=72)</th>
<th>Female % (n=90)</th>
<th>Total % respondents (n=162)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living in a rural area and working in agriculture</td>
<td>11.7</td>
<td>11.7</td>
<td>23.5</td>
</tr>
<tr>
<td>Living in a rural area and working in a profession other than agriculture</td>
<td>9.3</td>
<td>19.8</td>
<td>29</td>
</tr>
<tr>
<td>Living and working in the city</td>
<td>14.8</td>
<td>16</td>
<td>30.9</td>
</tr>
<tr>
<td>Don't know</td>
<td>3.1</td>
<td>1.2</td>
<td>4.3</td>
</tr>
<tr>
<td>Not applicable</td>
<td>5.6</td>
<td>6.8</td>
<td>12.3</td>
</tr>
</tbody>
</table>

### Long-term working plans

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>25</th>
<th>50</th>
<th>75</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living in rural area working in agriculture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>23.5</td>
</tr>
<tr>
<td>Living in rural area in non-agri profession</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>29</td>
</tr>
<tr>
<td>Living &amp; working in city</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30.9</td>
</tr>
<tr>
<td>Don't know</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.3</td>
</tr>
<tr>
<td>n/a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.3</td>
</tr>
</tbody>
</table>
Extent to which employers value applicants with green skills

<table>
<thead>
<tr>
<th></th>
<th>Male % (n=74)</th>
<th>Female % (n=98)</th>
<th>Total % respondents (n=172)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No, not at all</td>
<td>7</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>To some extent</td>
<td>23.3</td>
<td>23.3</td>
<td>46.5</td>
</tr>
<tr>
<td>Yes, to a great extent</td>
<td>8.7</td>
<td>23.3</td>
<td>32</td>
</tr>
<tr>
<td>Don’t know</td>
<td>4.1</td>
<td>3.5</td>
<td>7.6</td>
</tr>
</tbody>
</table>
Appendix 3: Data Forecasting

Data on rural youth was estimated by calculating the historical trajectory of urbanisation and applying it forwards to 2014 and 2019, based on the average annual change between 2009 and 2012 (as calculated from World Bank WDI data). The estimated remaining rural population was applied to figures for total youth numbers in each country for 2014 and 2019, as estimated by the UN Population Prospects (medium variant).

Sector change was estimated by applying historical annual change forward to 2014 and 2019, as sourced from national statistics sources. Green jobs data in the region was very limited; estimates had been made for Indonesia as a proportion of the total sector size by the Green Jobs Working Group, and these proportions were also applied to Vietnamese sector data. Limitations include the following:

- Historical annual change is only an indication of future patterns, which are likely to be influenced by a whole range of other factors.
- Data on jobs generally in the region is highly limited, especially for Myanmar; for green jobs, even more so.
- The structure of green jobs in Indonesia, for which a detailed study has been done, is likely to be different to the structure in the other study countries.
- There is no way of forecasting green jobs, even indicatively, without substantially more available data - it would otherwise be guesswork.

Rural Youth

The numbers of young people living in rural areas is forecast to fall in all study countries apart from Indonesia, due to a combination of increased levels of urbanisation and falling numbers of young people. In Indonesia, the number of young people is forecast to increase over the next five years, and while more young people will move to cities, this number is not enough to prevent an estimated increase in young people living in rural areas.

Young People in Rural Areas, 2014 and 2019 Estimates

<table>
<thead>
<tr>
<th>Country</th>
<th>2014</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>20,322,977</td>
<td>20,359,010</td>
</tr>
<tr>
<td>Myanmar</td>
<td>6,249,081</td>
<td>6,869,493</td>
</tr>
<tr>
<td>Thailand</td>
<td>5,944,640</td>
<td>5,440,798</td>
</tr>
<tr>
<td>Vietnam</td>
<td>10,857,821</td>
<td>8,941,238</td>
</tr>
</tbody>
</table>

Sectors and Green Jobs

Please note that due to the current unavailability of data from the National Statistics Office in Thailand, comparative analysis of sectors and green jobs between all countries is not possible at present.

Indonesia

Rural Youth

Young People in Rural Areas, 2014 and 2019 Estimates

<table>
<thead>
<tr>
<th>Year</th>
<th>2014</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20,322,977</td>
<td>20,359,010</td>
</tr>
</tbody>
</table>
Sectors and Green Jobs

The mining and quarrying sector is projected to grow the most, albeit from a relatively small baseline; construction is the major sector which shows the most significant growth. Employment in agriculture, forestry, hunting and fishery is estimated to fall by around 5% over the next five years.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, forestry, hunting &amp; fishery</td>
<td>39,447,892</td>
<td>37,467,729</td>
<td>-5.0%</td>
</tr>
<tr>
<td>Mining &amp; quarrying</td>
<td>1,700,021</td>
<td>2,425,045</td>
<td>42.6%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>15,342,169</td>
<td>17,789,629</td>
<td>16.0%</td>
</tr>
<tr>
<td>Energy (electricity, gas &amp; water)</td>
<td>265,942</td>
<td>316,954</td>
<td>19.2%</td>
</tr>
<tr>
<td>Construction</td>
<td>7,511,278</td>
<td>10,638,181</td>
<td>41.6%</td>
</tr>
<tr>
<td>Wholesale &amp; retail trade, restaurants &amp; hotels</td>
<td>25,793,021</td>
<td>30,156,074</td>
<td>16.9%</td>
</tr>
<tr>
<td>Transportation, storage &amp; communications</td>
<td>5,095,686</td>
<td>4,585,822</td>
<td>-10.0%</td>
</tr>
</tbody>
</table>

In 2008, the Asia Pacific Green Jobs Network estimated the numbers of green jobs in Indonesia to be as follows:
1. Agriculture: 2,434,000 green jobs (6.2% of total)
2. Transport: 603,000 green jobs (9.8% of total)
3. Manufacturing: 331,000 green jobs (2.6% of total)
4. Forestry: 242,000 green jobs (17.6% of total)
5. Construction: 187,000 green jobs (3.5% of total)
6. Fisheries: 97,000 green jobs (18.1% of total)
7. Tourism: 11,000 green jobs (no data on the percentage of total jobs)
8. Energy: 4,700 green jobs (2.3% of total)
9. Mining: 300 green jobs (0.03% of total)

Due to a lack of detailed sector data, we have not attempted to project these figures forward to 2014 and 2019.

Myanmar

Rural Youth

Young People in Rural Areas, 2014 and 2019 Estimates

<table>
<thead>
<tr>
<th>Year</th>
<th>Labour Force</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>6,249,081</td>
</tr>
<tr>
<td>2019</td>
<td>5,869,493</td>
</tr>
</tbody>
</table>

Sectors and Green Jobs

There is no information available on employment sectors in Myanmar as there has been no national labour force survey since 1990. The ILO is assisting the Government of Myanmar with the establishment of a national labour force survey, the implementation of which is expected in 2015 or 2016.
Sector change for both the labour force as a whole and for the youth labour force (age 15-24) has been estimated for 2014 and 2019 by applying the annual change between Q3 in 2012 and Q3 in 2013 forward. The youth labour force size was estimated taking account of the shrinkage in numbers of young people over the next five years. The most significant growth sectors for young people are likely to be Finance and Insurance (growth of 69.4%); Electricity, Gas and Steam Supply (growth of 48.4%); and Administrative and Support Services (34.1%). While the agricultural sector is the largest employer in Thailand, its growth is predicted to decline in the next five years, with the youth workforce in the sector predicted to drop by almost 12%.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, forestry and fishing</td>
<td>16,110,958</td>
<td>14,808,437</td>
<td>-8.1%</td>
<td>2,118,741</td>
<td>1,865,966</td>
<td>-11.9%</td>
</tr>
<tr>
<td>Mining &amp; quarrying</td>
<td>58,399</td>
<td>47,742</td>
<td>-18.2%</td>
<td>7,680</td>
<td>6,016</td>
<td>-21.7%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>5,546,684</td>
<td>6,261,657</td>
<td>12.9%</td>
<td>729,440</td>
<td>789,012</td>
<td>8.2%</td>
</tr>
<tr>
<td>Electricity, gas, steam supply</td>
<td>113,296</td>
<td>175,509</td>
<td>54.9%</td>
<td>14,899</td>
<td>22,115</td>
<td>48.4%</td>
</tr>
<tr>
<td>Water supply</td>
<td>218,415</td>
<td>6,710,476</td>
<td>2,972.4%</td>
<td>28,724</td>
<td>845,567</td>
<td>2,843.8%</td>
</tr>
<tr>
<td>Construction</td>
<td>2,193,078</td>
<td>1,865,075</td>
<td>-15.0%</td>
<td>288,410</td>
<td>235,012</td>
<td>-18.5%</td>
</tr>
<tr>
<td>Wholesale &amp; retail trade</td>
<td>5,664,493</td>
<td>5,321,963</td>
<td>-6.0%</td>
<td>744,933</td>
<td>670,604</td>
<td>-10.0%</td>
</tr>
<tr>
<td>Transportation and storage</td>
<td>842,856</td>
<td>605,147</td>
<td>-28.2%</td>
<td>110,843</td>
<td>76,253</td>
<td>-31.2%</td>
</tr>
<tr>
<td>Accommodation and food service</td>
<td>2,050,360</td>
<td>1,507,303</td>
<td>-26.5%</td>
<td>269,641</td>
<td>189,931</td>
<td>-29.6%</td>
</tr>
<tr>
<td>Information and communication</td>
<td>174,206</td>
<td>104,645</td>
<td>-39.9%</td>
<td>22,910</td>
<td>13,186</td>
<td>-42.4%</td>
</tr>
<tr>
<td>Finance and insurance</td>
<td>484,727</td>
<td>857,145</td>
<td>76.8%</td>
<td>63,746</td>
<td>108,006</td>
<td>69.4%</td>
</tr>
<tr>
<td>Real estate</td>
<td>147,339</td>
<td>195,049</td>
<td>32.4%</td>
<td>19,376</td>
<td>24,578</td>
<td>26.8%</td>
</tr>
<tr>
<td>Professional, scientific &amp; technical</td>
<td>268,488</td>
<td>367,135</td>
<td>36.7%</td>
<td>35,309</td>
<td>46,262</td>
<td>31.0%</td>
</tr>
<tr>
<td>Administrative &amp; support service</td>
<td>435,843</td>
<td>610,019</td>
<td>40.0%</td>
<td>57,317</td>
<td>76,867</td>
<td>34.1%</td>
</tr>
<tr>
<td>Public administration &amp; defence</td>
<td>1,563,179</td>
<td>1,350,398</td>
<td>-13.6%</td>
<td>205,572</td>
<td>170,160</td>
<td>-17.2%</td>
</tr>
</tbody>
</table>
Using the proportions from the ILO Indonesia paper\textsuperscript{136}, we estimate that there are currently around:

- 1,050,000 green jobs in the agriculture, forestry and fishery sector, of which around 132,000 are held by young people.
- Fewer than 20 green jobs in the mining and quarrying sector, of which around a tenth are held by young people.
- 144,000 green jobs in the manufacturing sector, of which around 19,000 are held by young people.
- 77,000 green jobs in the construction sector, of which around 10,000 are held by young people.
- 83,000 green jobs in the transportation and storage sector, of which around 11,000 are held by young people.

Due to a lack of detailed sector data, we have not attempted to project these figures forward to 2014 and 2019.

Vietnam

Rural Youth

Young People in Rural Areas, 2014 and 2019 Estimates

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>1,083,641</td>
<td>880,807</td>
<td>-18.7%</td>
<td>142,509</td>
<td>110,988</td>
<td>-22.1%</td>
</tr>
<tr>
<td>Human health &amp; social work</td>
<td>668,581</td>
<td>706,744</td>
<td>5.7%</td>
<td>87,925</td>
<td>89,055</td>
<td>1.3%</td>
</tr>
<tr>
<td>Arts, entertainment</td>
<td>257,357</td>
<td>364,130</td>
<td>41.5%</td>
<td>33,845</td>
<td>45,883</td>
<td>35.6%</td>
</tr>
<tr>
<td>Other services</td>
<td>599,816</td>
<td>519,126</td>
<td>-13.5%</td>
<td>78,881</td>
<td>65,414</td>
<td>-17.1%</td>
</tr>
<tr>
<td>Activities of households as employers</td>
<td>134,898</td>
<td>29,766</td>
<td>-77.9%</td>
<td>17,740</td>
<td>3,751</td>
<td>-78.9%</td>
</tr>
<tr>
<td>Extraterritorial activities</td>
<td>2,367</td>
<td>222</td>
<td>-90.6%</td>
<td>311</td>
<td>28</td>
<td>-91.0%</td>
</tr>
<tr>
<td>Unknown</td>
<td>206,656</td>
<td>14,347,216</td>
<td>6.842.6%</td>
<td>27,177</td>
<td>1,807,849</td>
<td>6.552.1%</td>
</tr>
</tbody>
</table>

Sectors and Green Jobs

The estimated top five sectors for jobs for young people in rural areas are\textsuperscript{137}:

1. Agriculture, forestry and fishery: 5,783,600 jobs
2. Manufacturing: 1,944,008 jobs
3. Wholesale and retail trade, repair of cars and other vehicles: 844,630 jobs
4. Construction: 734,769 jobs
5. Training and education: 221,858 jobs

Sector change for both the labour force (LF) as a whole and for the youth labour force (age 15-24) has been estimated for 2014 and 2019 by applying the average annual change between 2011 (2009 and 2010 data were not available) and 2013 forward. The youth labour force size was estimated taking account of the shrinkage in numbers over the next five years.

\textsuperscript{136} \url{http://apgreenjobs.ilo.org/resources/resource.2013-07-22.0113256166/at_download/file1}

\textsuperscript{137} Based on the rural/urban divide in different sectors (2013) and the proportion of young people (aged 15-24) doing those jobs (2011). Data sources: 2013 (Q3) and 2011 Vietnam labour force surveys.
years. For young people, the biggest sector growth is likely to be in real estate activities and technology and science (albeit from a small baseline). For sectors in which the youth labour force size is at least half a million, the biggest growth is likely to be in wholesale and retail trade, repair of cars and other vehicles; and hotels and restaurants. Almost a million jobs are likely to be lost by young people in agriculture, forestry and fishery. The most significant falls - again, from a small baseline - are likely to be seen in electricity and gas jobs, and domestic hired labourers.

Using the proportions from the ILO Indonesia paper, we estimate that there are currently around:

- 1.5 million green jobs in the agriculture, forestry and fisheries sector, 400,000 of which are held by young people.
- 200,000 green jobs in the manufacturing sector, 90,000 of which are held by young people.
- 155,000 green jobs in the transport and storage sector, 40,000 of which are held by young people.
- 115,000 green jobs in the construction sector, 40,000 of which are held by young people.
- Fewer than 100 green jobs in the mining and quarrying sector, around a third of which are held by young people.

---

--- | --- | --- | --- | --- | ---
Agriculture, forestry & fishery | 24,825,741 | 25,605,306 | 3.1% | 6,429,867 | 5,501,358 | -14.4%
Mining & quarrying | 243,924 | 172,252 | -29.4% | 79,031 | 55,810 | -29.4%
Manufacturing | 7,660,732 | 9,029,252 | 17.9% | 3,370,722 | 3,295,677 | -2.2%
Electricity & gas | 99,766 | 51,665 | -48.2% | 26,139 | 11,229 | -57.0%
Water, sewerage & waste | 132,513 | 212,238 | 60.2% | 26,370 | 35,036 | 32.9%
Construction | 3,302,270 | 3,439,961 | 4.2% | 1,060,029 | 916,007 | -13.6%
Wholesale & retail trade, repair of cars & other vehicles | 7,106,702 | 9,923,939 | 39.6% | 1,734,035 | 2,008,696 | 15.8%
Transport & storage | 1,591,230 | 1,952,056 | 22.7% | 397,808 | 404,830 | 1.8%
Hotels & restaurants | 2,351,141 | 3,056,149 | 30.0% | 557,220 | 600,846 | 7.8%
Information & communication | 246,742 | 238,619 | -3.3% | 97,217 | 77,990 | -19.8%
Finance, banking & insurance | 328,539 | 378,307 | 15.1% | 125,830 | 120,194 | -4.5%
Real estate activities | 210,460 | 788,516 | 274.7% | 33,674 | 104,658 | 210.8%
Technology & science | 295,495 | 574,533 | 94.4% | 111,106 | 179,202 | 61.3%
Administration | 213,555 | 235,597 | 10.3% | 60,649 | 55,505 | -8.5%
Politics/government | 1,814,866 | 2,342,889 | 29.1% | 410,160 | 439,238 | 7.1%
Training & education | 1,798,159 | 1,952,430 | 8.6% | 467,521 | 421,104 | -9.9%
Health & social work | 514,341 | 532,940 | 3.6% | 136,300 | 117,156 | -14.0%
Recreation, culture & sport | 331,453 | 531,346 | 60.3% | 68,279 | 90,800 | 33.0%
Other service activities | 781,306 | 826,867 | 5.8% | 292,990 | 257,221 | -12.2%
Domestic hired labourers | 176,331 | 141,751 | -19.6% | 38,440 | 25,634 | -33.3%

Using the proportions from the ILO Indonesia paper, we estimate that there are currently around:

- 1.5 million green jobs in the agriculture, forestry and fisheries sector, 400,000 of which are held by young people.
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- 115,000 green jobs in the construction sector, 40,000 of which are held by young people.
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## Appendix 4: Field Research Respondents
### Indonesia

<table>
<thead>
<tr>
<th>Stakeholder Group</th>
<th>Kupang</th>
<th>Soe</th>
<th>Kefamenanu</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGOs</td>
<td>WWF</td>
<td>CIS Timor</td>
<td>World Vision</td>
</tr>
<tr>
<td></td>
<td>CARE</td>
<td></td>
<td>Yayasan Mitra Tani Mandiri (YMTM)</td>
</tr>
<tr>
<td>Policy Makers</td>
<td>Agency for Food Security</td>
<td>Social Service, Manpower and Transmigration</td>
<td>District Animal Husbandry Department</td>
</tr>
<tr>
<td></td>
<td>Social Service, Manpower and Transmigration</td>
<td>Regional Body for Planning and Development</td>
<td>District Agriculture Office</td>
</tr>
<tr>
<td></td>
<td>District Fisheries Office</td>
<td></td>
<td>District Fisheries Office</td>
</tr>
<tr>
<td>Young People</td>
<td>Graduates, teachers, students, farmers</td>
<td></td>
<td>District Social Service, Manpower and Transmigration</td>
</tr>
<tr>
<td>Employers</td>
<td></td>
<td></td>
<td>Women Empowerment, Family Planning and Family Welfare</td>
</tr>
<tr>
<td>Other</td>
<td>ILO (by telephone)</td>
<td></td>
<td>Department of Social Welfare</td>
</tr>
</tbody>
</table>

### Myanmar

<table>
<thead>
<tr>
<th>Stakeholder Group</th>
<th>Yangon</th>
<th>Mandalay</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGOs &amp; Development Actors</td>
<td>ILO, Local Resource Centre, KT Care, Loka Ahlinn, YMCA, GIZ, FREDAX, ADRA, Spectrum, Mercy Corps</td>
<td>Community health worker; Leprosy Mission Myanmar, Law graduate, Maths graduate, working in parents’ shop, Traditional medicine graduate, working with diseases, Social scientist and learning centre manager, First year university student studying Myanmar literature and working in a community based organisation focusing on HIV, Maths graduate working in micro finance with World Vision, Medicine graduate and employer, hoping to work as a medical counsellor, and currently running a company trading glass and kitchen ware.</td>
</tr>
<tr>
<td>Young People</td>
<td>Community health worker; Leprosy Mission Myanmar, Law graduate, Maths graduate, working in parents’ shop, Traditional medicine graduate, working with diseases, Social scientist and learning centre manager, First year university student studying Myanmar literature and working in a community based organisation focusing on HIV, Maths graduate working in micro finance with World Vision, Medicine graduate and employer, hoping to work as a medical counsellor, and currently running a company trading glass and kitchen ware.</td>
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</tr>
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<td>Stakeholder Group</td>
<td>Yangon</td>
<td>Mandalay</td>
</tr>
<tr>
<td>-------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>----------------------------------------------------</td>
</tr>
<tr>
<td>Training Centres</td>
<td>• Comprehensive Development Education Centre</td>
<td>• Centre for Vocational Education</td>
</tr>
</tbody>
</table>

**Thailand**

<table>
<thead>
<tr>
<th>Stakeholder Group</th>
<th>Chiang Mai</th>
<th>Chiang Rai</th>
</tr>
</thead>
</table>
| Policy Makers           | • Chiang Mai Employment Office (in a focus group with the training institutions below). | • Chiang Rai Vocational Skill Development Centre  
|                         |                                                                           | • Nirand-Ratana Beauty and Dressmaking School  
|                         |                                                                           | • Women’s Vocational Skills Training Centre                                     |
| Training Institutes      | • Chiang Mai Centre for Skill Development  
|                         | • Fang Vocational Education College                                      | • Chiang Rai Vocational Skill Development Centre  
|                         |                                                                           | • Nirand-Ratana Beauty and Dressmaking School  
|                         |                                                                           | • Women’s Vocational Skills Training Centre                                     |
| Young People            | • Youths in Chiang Dao                                                   | • Students of healthcare, hospitality and catering, bakery and beauty.      |
| Employers               |                                                                           | • Chiang Rai Interproduction  
|                         |                                                                           | • Le Meridien  
|                         |                                                                           | • Mazda  
|                         |                                                                           | • Toyota                                                                 |

**Vietnam**

<table>
<thead>
<tr>
<th>Stakeholder Group</th>
<th>Ha Noi</th>
<th>Da Nang</th>
</tr>
</thead>
</table>
| NGOs & Development Actors | • GIZ  
|                         | • ILO                                                                                   | • Youth Union (staff)                                                     |
| Young People            | • REACH (students)  
|                         | • Nguyen Binh Khiem Voced School (students)                                             | • REACH Danang (students)                                                |
|                         | • Hoa Sua School (students)                                                           |                                                                           |
|                         | • Agricultural University (students)                                                  |                                                                           |
| Employers               | • Mövenpick Hotel  
|                         | • Boo Fashion                                                                          | • Business in Danang                                                     |
| Vocational Trainers     | • REACH (staff)  
|                         | • Live and Learn                                                                      | • REACH Danang (staff)                                                   |
|                         | • Nguyen Binh Khiem Voced School (staff)                                              |                                                                           |
|                         | • Hoa Sua School (staff)                                                              |                                                                           |
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