Report on the
Green Growth
E-learning Platform

ESCAP-developed tool for greening economic growth

by
EDPS/EDD

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## Abbreviations and Acronyms

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<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>AIT</td>
<td>Asian Institute of Technology</td>
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<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
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<td>CA</td>
<td>Central Asia</td>
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<td>CAREC</td>
<td>Regional Environmental Centre for Central Asia</td>
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<tr>
<td>EDPS EDD</td>
<td>Environment and Development Policy Section Environment and Development Division</td>
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<tr>
<td>ESCWA</td>
<td>Economic and Social Commission for Western Asia</td>
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<td>FAO</td>
<td>Food and Agriculture Organization</td>
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<td>GGCDP</td>
<td>Green Growth Capacity development Programme</td>
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<td>GMS</td>
<td>Greater Mekong Subregion</td>
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<td>ICT</td>
<td>Information and Communication Technologies</td>
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<td>IGES</td>
<td>Institute for Global Environmental Strategies</td>
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<td>ILO</td>
<td>International Labour Organization</td>
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<tr>
<td>IT</td>
<td>Information Technologies</td>
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<tr>
<td>KOICA</td>
<td>Korea International Cooperation Agency</td>
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<td>MCED</td>
<td>Ministerial Conference on Environment and Development</td>
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<td>MOOC</td>
<td>Massive Open Online Course</td>
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<tr>
<td>Moodle</td>
<td>Modular object-oriented dynamic learning environment</td>
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<td>PAGE</td>
<td>Partnership for Action on Green Economy</td>
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<tr>
<td>PHP</td>
<td>General-purpose programming language</td>
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<tr>
<td>SCP</td>
<td>Sustainable Consumption and Production</td>
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<tr>
<td>SIAP</td>
<td>Statistical Institute for Asia and the Pacific</td>
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<td>SINGG</td>
<td>Seoul Initiative Network on Green Growth</td>
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<td>SME</td>
<td>Small and Medium Enterprises</td>
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<tr>
<td>ToT</td>
<td>Trainer of Trainers</td>
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<tr>
<td>UN</td>
<td>United Nations</td>
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<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
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<tr>
<td>UNEP</td>
<td>United Nations Environment Programme</td>
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<tr>
<td>UNESCAP</td>
<td>United Nations Economic and Social Commission for Asia and the Pacific</td>
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<tr>
<td>UNIDO</td>
<td>United Nations Industrial Development Organization</td>
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<tr>
<td>UNITAR</td>
<td>United Nations Institute for Training and Research</td>
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<td>UNU</td>
<td>United Nations University</td>
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<td>WB</td>
<td>World Bank</td>
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Background

Objectives of the report on Green Growth Capacity Development Programme

The purpose of this report is to provide an overview of the history and progress in the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) Green Growth Capacity Development Programme to identify the strengths and weaknesses of the programme, with a special emphasis on the online e-learning component. Since 2011, when the online e-learning facility has been first launched, there have been several advancements on the ICT market. This can be seen especially from appearance of numerous online e-learning platforms in other UN agencies, as well as other non-UN institutions. This defines the need to critically evaluate UNESCAP on-line e-learning facility and identify the components that should be upgraded to effectively utilize and reflect all the achievements in the online e-learning industry, as well as address recommendations from capacity building participants concerning the operation of facility.

Apart from analyzing and assessing the on-line e-learning platform developed by UNESCAP, this report provides a comprehensive assessment of similar courses available on the market, making a comparative analysis of advantages and disadvantages of each to integrate the best practices into the upcoming upgrading process of e-learning.

UNESCAP’s mandate for Green Growth capacity development

The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) mandate to deliver low-carbon green growth capacity development emerged from Fifth Ministerial Conference on Environment and Development (MCED-5) held in Seoul, Republic of Korea, in March 2005.¹ Green Growth, or environmentally sustainable economic growth, was identified at the Conference as one of the viable strategies for achieving sustainable development in the Asia and Pacific region. The MCED-5 outcomes included the adoption of the Ministerial Declaration, Regional Implementation Plan for Sustainable Development in Asia and the Pacific 2006-2010, and Seoul Initiative Network on Green Growth (SINGG).

UNESCAP Resolution 61/9 provides guidance to the Secretariat on the implementation of the decisions made at MCED-5 and requests capacity development assistance to the countries in the region for the operationalization and application of the Green Growth approach.² In addition, UNESCAP was requested to enhance the understanding of local and national Governments about environmental policies and strategies for poverty reduction and inclusive and sustainable development.³

³ Resolution 69/1 of UNESCAP, 2005
History of UNESCAP’s Green Growth capacity development

Since that time there has been a number of direct national requests for capacity development assistance from governments in the region. To meet such needs, in 2009 UNESCAP designed a unique training toolkit, and initiated a regional capacity building programme with funding from KOICA and in partnership with the Regional Helpdesk on SCP and the British Foreign and Commonwealth Office, to enhance the knowledge and skills of decision makers and other key stakeholders to develop and apply green growth strategies.

The subsequently developed Green Growth Capacity Development Programme was the only course of its kind which took an integrative and multidisciplinary approach towards promoting environmentally sustainable economic growth. Building on UNESCAP’s longstanding development experience in the region, the programme emphasized policies, tools, and techniques tailored to the Asia-Pacific context.

Indeed, since 2009, UNESCAP has been delivering capacity development support for green growth in the region with activities covering three tracks:

- National Training of Trainers seminars – over 20 seminars were delivered.
- Regional Training of Trainers seminars – 13 regional sessions were held, organized in partnerships with other regional organizations and bilateral partners.
- Institutional support to projects and pilot applications - Cambodia (GMS), Kazakhstan (CA) and Samoa (Pacific).

More than 700 policy makers have participated in the on-site Green Growth Training of Trainers (ToT) seminars at national and regional levels. The seminars examined the unique development challenges facing each country and sought to provide nationally appropriate solutions for mitigating and adapting to climate change while implementing environmentally sustainable economic growth patterns. These trainings worked to assist building individual, organizational and institutional capacities to ensure Green Growth goals could be defined and realised at national levels. The programme was targeted towards middle-level government managers and ministerial officials, as well as representatives from the private sector and non-governmental organisations. At each training participants were given the Green Growth ToT toolkit in a hardback folder.

The first phase training sessions included regional and national seminars as following:

- 1st Training of Trainers Seminar on Development and Application of Green Growth Policy Tools - 22-27 June 2009, Prince Palace Hotel, Bangkok;

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4 The first ToT Seminar on Development and Application of Green Growth Policy Tools was held during the period of 22-27 June 2009 in Bangkok, where the Green Growth Training of Trainers toolkit, which included the materials on green growth policy tools, was presented. In September 2009 the regional level capacity development workshop on Green Growth Policy Tools for Low Carbon Development was first organized for 36 senior policy makers from ASEAN countries in Kanchanaburi, Thailand. This was followed up in 2010 and 2011, with national seminars held in Republic of Korea, Malaysia, Cambodia, Thailand and Indonesia.
• Workshop on Low-Carbon Growth in the Asia-Pacific Region - 18 October 2010, Bangkok, Thailand;
• The 2nd Training of Trainers Capacity Development Seminar titled Green Growth: A Path to Good Governance - 29 March – 1 April 2010, Seoul, Republic of Korea;
• Green Growth Policy Tools Training Workshop for Low Carbon Development - 18 to 19 May 2010, Putrajaya, Malaysia;
• Training of Trainers Seminar on pro-poor Green Business for Provision of Basic Services- 20 to 26 November 2010, Samoa;
• ILO Staff training seminar on Green Jobs - 8 to 10 December 2010 in UNCC, Bangkok, Thailand;
• Green Growth Briefing Session to Representatives of the Asian Women’s Network on Gender and Development (AWNGAD) - 9 February 2011, UNCC, Bangkok, Thailand;
• Green Growth policy tools training workshop for low carbon development - 16-17 February 2011, Phnom Penh, Cambodia;
• The First National Seminar on Green Growth Policy Tools for Low Carbon Development in Thailand - 23 - 24 February 2011, UNCC, Bangkok; and
• Green Growth Policy Tools Workshop for Low Carbon Development in Indonesia - 3-4 March 2011, Jakarta, Indonesia.

During late 2009 and early 2010 it was decided to develop an e-learning\(^5\) version of the training materials. The e-learning tool covered the topic of Low Carbon Green Growth, Sustainable Consumption and Production, Green Business, Sustainable Infrastructure and Green Tax and Budget Reform. This was further supplemented with another module presented in pdf format on low carbon development. After its launch in June 2010 participants of national Green Growth capacity development workshops were able to continue their training by use of a CD-ROM based e-learning tool for distance and desktop training.

In November 2011 the on-line e-learning facility was launched, which was developed with an objective of reaching out to thousands of policy makers in the region in a near zero emissions and cost-effective manner, ensuring interactivity and self-learning principles. The first course made available for participants was the Fundamentals of Green Growth Policies, which covered low carbon green growth, environmental tax and fiscal reform, sustainable infrastructure and greening of business. Every participant is expected to submit case study about the green growth policies implemented to obtain a certificate. A Trainer of Trainers certificate is awarded to participants upon successful completion of modules and corresponding quizzes, and submission of a case study.

The second phase of the Green Growth Capacity Development Programme started in 2012, and includes two streams of programme – (1) expansion of the e-learning modules and (2) addressing capacity development trainings and support to policy makers and other key stakeholders. To implement the first portion, UNESCAP developed a Low Carbon Green Growth Roadmap online

\(^5\) E-learning here is used to refer to a CD-Rom training package. The distinction ‘online E-learning is applied for web-based training tools.
e-learning course in 2012, which replaced the Fundamentals of Green Growth Policies, and covers the following five tracks: Green Growth, a New Growth Strategy for Asia and the Pacific; Low Carbon Green Growth Roadmap for Asia and the Pacific; Changing the Invisible Structure of the Economy; Changing the Visible Structure of the Economy; Turning Green into a Business Opportunity. It was decided that the case studies that participants submitted to obtain a certificate would be shared via a dedicated section of the e-learning facility.

On-site trainings within the second phase of Green Growth Capacity Development Programme started in September 2012. For this purpose UNESCAP has developed a special methodology of delivering low carbon green growth related trainings using a blended type of education, which includes a two-three day on-site training, followed by continued learning through the online e-learning facility for completion of all modules, quizzes and submitting case studies.

The second phase of on-site training sessions include:

- 2nd National Seminar on Green Growth Policy Tools for Low Carbon Development – 7-9 November 2012, Malaysia;
- UNESCAP Training on Green Growth Policy Tools for Low Carbon development – 12-14 November 2012, Philippines;
- First Seminar on Green Growth Policy Tools for Low Carbon Development – 28-29 January 2013, Brunei Darussalam;
- National Seminar on Green Growth Policy Tools for Low Carbon Development – 1-2 April 2013, Myanmar;
- Seminar on Green Growth Policy Tools for Low Carbon Development – 10-12 April 2013, Mongolia,
- National Seminar on Green Growth Policy Tools for Low Carbon Development – 2 October 2013, Astana, Kazakhstan;
- Training Session on the on-line e-learning course on Green Growth Capacity Development – 7 November 2013, Beirut, Lebanon;
On-line e-learning facility

*Development and operation of Green Growth e-learning facility*

The Green Growth online e-learning facility takes an integrative, multidisciplinary approach towards promoting environmentally sustainable economic growth and was designed to educate participants about the most innovative, cost-effective approaches to Green Growth. The facility is available at:

http://www.greengrowth-elearning.org/lms/

The online e-learning tool was designed to equip policy makers with the knowledge and policy tools to enable them to pursue low carbon and environmentally sustainable economic growth patterns. Structured around a series of interactive training modules, the curriculum encourages participants to actively reflect on low carbon green growth strategy and its applicability to their national context.

The online e-learning tool provides a near zero emissions platform for interactive and self-paced learning throughout the course duration. Participants are coached by an on-line trainer, and have continuous access to an on-line reference library with reading and video materials and to discussion forums.

The first course, available at the e-learning facility in 2011-2012 was the Fundamentals of Green Growth Policies, which covered five modules on low carbon development, sustainable consumption and production, green business, sustainable infrastructure and green tax and budget reforms. It was later replaced by the Low Carbon Green Growth Roadmap e-learning course covering the modules related to quality of growth, low carbon green growth roadmap for Asia and the Pacific, reforming invisible and visible structures of the economy and greening of business. To run the modules participants needed to have Abode Flash Player and Adobe Reader installed on their computers. It also utilizes video materials, such as High Stakes, the Economics of Climate Change (UK Foreign and Commonwealth Office), Introduction to Low Carbon Green Growth (EDD/UNESCAP), London, The Price of Traffic and Road Pricing (PBS), Sustainable Transport System in Bogota, Energy for Developing World, Grameen Shakti (PBS Energy e2).

At the end of each module there is a corresponding quiz, where participants’ results should not be less than 75%. Questions are mainly multiple-choice, and reflect the content hierarchy and reinforce the course materials. The final week of six week online e-learning requires development of a case study by each participant, who already mastered whole course material with quizzes. Case study involves conducting research to show-case the applicability of green growth policy in a country or region, highlighting all the details of a policy or project, any challenges the policy makers may have faced during development of policy or its implementation. Case studies should be at least 85% original with references presented at the end of the document. Upon successful completion of the course and performing all course requirements, participants are issued the

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6 Tomovic M., GGCDD Self-Assessment Report, UNESCAP, 2011
7 Findlater M., EDD Capacity Development Programme: Brief Progress Overview, 2011-2014
Training of Trainers (ToT) certificate. Certificate is sent to registered email address in PDF format, which they can later print.

The online e-learning facility also provides the hyperlink to a green growth related glossary.  

**Technical overview of the platform**

The online e-learning modules’ content is based on the original publication of UNESCAP Low Carbon Green Growth Roadmap for Asia and the Pacific. Design of graphics and animation was undertaken by Global Wireless Company based in Bangkok, Thailand. Their team of software programmers and graphic designers worked closely with the UNESCAP capacity development team and international consultants to produce a working version of online e-learning.

After evaluating several different systems, it was decided to build the learning platform using Moodle (Modular Object-Oriented Dynamic Learning Environment, or virtual learning environment) set up to a Linux server – high-powered variant of the Linux open source operating system to handle network and system administration, database management and web services. Moodle is a free open source software used to create platforms for blended and online learning and includes a wide variety of innovative features such as personalised dashboard, collaborative tools and activities, all-in-one calendar, notifications, track progress, multilingual capability, etc. Moodle is flexible software and is compatible with all operating systems such as Unix, Linux, FreeBSD, Windows, Mac OS X, NetWare and others that support PHP – general-purpose scripting language, and databases. PHP is used to write and develop new modules for the Green Growth online e-learning facility and all related content had been transferred to Zolipe, an IT solutions provider located in Bangalore, who provides maintenance of the facility.

New modules for the e-learning have been created using less animation to ensure that course material can be uploaded in developing countries, where internet connectivity speed is low.

**Course delivery methodology**

The Low Carbon Green Growth on-line e-learning is designed to be self-paced and held over a six week period. It is based on a blended learning approach, which effectively utilizes on-site training with on-line education. On-site trainings usually last for 2-3 days period, and then continue with six week on-line training through e-learning facility. Upon completion the Trainer of Trainers certificate is issued. On-line sessions are open for all stakeholders, and run parallel to on-site workshops.

At the beginning the main target audience was policy-makers, however taking into account the relevance of stakeholder engagement, courses’ target audience expanded to all key stakeholders,

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8 The link currently doesn’t properly work, so this issue should be addressed during the upcoming upgrading of the facility.
including public and private sector representatives, academia, civil society, etc. Case studies, submitted by participants, edited and uploaded to a case studies library at the platform. So far, the online e-learning platform hosts more than 130 case studies of best practices written by participants.

Courses overviews

The on-line e-learning curriculums are structured around a series of interactive training modules that encourage participants to actively reflect on low carbon green growth strategy and its applicability to their national context. To date there is one flagship course available with additional courses under development.

Available courses

<table>
<thead>
<tr>
<th>Low Carbon Green Growth Roadmap course</th>
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<tr>
<td>The concept of Green Growth emerged in the Asia-Pacific region to turn resource constraints and the climate crisis into an economic opportunity that generates a double dividend (higher growth with lower environmental impact) by improving the efficiency of resource use and increasing investments in natural capital to drive economic growth. Realizing the promise of Green Growth will require a bold and ambitious transformation of the economic system. The “visible structure” of the economy, comprising such physical infrastructure as transport, building and energy systems, together with the “invisible structure”, which encompasses market prices, governance, regulations and lifestyles, have to be re-oriented to resource efficiency. The objective of the “Low Carbon Green Growth Roadmap” training course is to explain how to begin such a transformation.</td>
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Modules

- **Green Growth, A New Growth Strategy for Asia and the Pacific**
  - Lecture: From quantity to quality of growth
- **Track 1: Improving quality of growth and maximizing net growth**
- **Track 2: Changing the Invisible Structure of the Economy**
- **Track 3: Changing the Visible Structure of the Economy**
- **Track 4: Turning Green Into a Business Opportunity**

Additional learning materials supporting the course include:

- Sixty-three fact sheets that provide detailed information and analysis of policy options;
- Fifty-one case studies that provide detailed information about successful practices that can be found in Asia-Pacific and elsewhere;
- Eight policy papers that provide in-depth analysis for specific sectors, such as fiscal reform, urban planning, transport, green buildings, water infrastructure and trade.

| Fundamentals of Green Growth Policies course (no longer available online) |
The objective of the Fundamentals of Green Growth training course is to introduce participants to Green Growth, which is a policy focus for Asia and the Pacific that emphasizes ecologically sustainable economic progress to foster low-carbon, socially inclusive development.

### Modules

- **Low Carbon Green Growth Roadmap course**
- **Sustainable Consumption and Production**
- **Greening Business**
- **Sustainable Infrastructure:**
- **Green Tax and Budget Reform**

### New courses under development

#### Water Security in Asia and the Pacific (1st module to be available in July)

This e-learning course aims at sharing practical solutions to build sustainable and resilient water management systems to foster awareness, engagement, demand and application of appropriate systems and technologies among policy makers, local authorities and community stakeholders.

### Modules

- **Wastewater Management and Sanitation, promoting Decentralised Wastewater Treatment Systems (DEWATS) in South-East Asia**
- **Market Opportunities for Decentralised Wastewater Treatment Systems**
- **Fundamentals of Integrated Water resources Management**
- **Water and Green Growth**

#### Liveable Cities

The objective of the “Liveable cities” online training course is to build the capacity of participants in planning cities and their infrastructure, such as transport, housing, energy systems, water systems, parks, etc., in a way to promote social, economic and environmental benefits. In other words, participants learn how to prioritize win-win actions. Such an approach, which includes long-term, integrated/holistic and participative planning practices, will lead to more liveable cities. The module is based on the UNESCAP 2011 publication *Are we building competitive and liveable cities?*

### Modules

- **Addressing urban challenges: Key urban issues, opportunities, barriers and strategies**
- **Strategies, planning processes and tools: Planning processes and tools to identify win-win actions and make planning strategies work in practice**
- **Policy options: Policy options and enabling conditions related to urban planning and design, transport, buildings, energy systems, waste systems and water systems**
- **Assessing the social, environmental and economic consequences of actions**
E-learning figures

Key figures

Since the start of delivery of online e-learning trainings, UNESCAP has been keeping record of the user statistics and information about the participants. This chapter seeks to highlight some of the key statistics and initial impacts of the online e-learning over the past few years.

Since the start of GGCDP, more than 750 professionals from more than 16 countries have been educated through on-site trainings and about 80 professionals from the ESCWA region. The online e-learning facility was first launched on 14 November 2011, and has since offered roughly 7 to 8 sessions per year. By June 2015, more than 1,400 participants had registered to the green growth e-learning, representing 92 UN member-States. More than 200 trainees have been certified as Trainer of Trainers, which makes about 17-18% of completion rate, while this rate is equal to only about 7% in most MOOCs (Massive Open Online Courses).

In total, there have been over 20 national on-site training sessions organised across the region as well as 27 on-line e-learning sessions delivered. Since September 2013, the on-line e-learning courses have been offered in three languages - English, Russian and Arabic.

Out of those 1,400 participants registered for the e-learning training 82% (1109 participants) represent 36 UNESCAP member-States (Figure 1).

![ESCAP Member State participation by country](https://www.timeshighereducation.co.uk/news/mooc-completion-rates-below-7/2003710.article)

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9 Chris Parr, MOOC completion rates ‘below 7%’, available at: https://www.timeshighereducation.co.uk/news/mooc-completion-rates-below-7/2003710.article
In Asia and the Pacific the highest rate of participation belongs to South East Asia – 60% of all ESCAP participants, followed by Central Asia – 13%, South Asia – 11%, East and North-East Asia – 7%, West Asia – 4%, North America and the Pacific – 2% each (Figure 2). Of all registered participants, 22% represent landlocked developing countries (LLDC), namely Kazakhstan (102), Lao PDR (41), Mongolia (34), Tajikistan (25), Nepal (16), Kyrgyzstan (12), Uzbekistan (7), Bhutan (6) and Afghanistan (1) (see Figure 3).

In total, 655 participants from 10 ASEAN member-States have been enrolled in on-line e-learning sessions making up 48% of the overall number of participants, and 59% of ESCAP participants (figure 4).

The rest 18% represent non-ESCAP member-States across Europe, Africa, South and North America, and the Middle East.
The analysis of completion of on-line sessions showed that the majority of certified participants come from public sector – **28.3% of registered policy makers submit their case studies and get certified.** Governments are followed by civil society who represent 18.8%, then academia – 17.6%, UN agencies – 17%, private sector – 10.7%, other international and regional organizations – 6%, and others – 2.5%.

In total, the proportion of female participants is 45% (614 people) and of male 55% (746 people). Closer look at number will show the disproportions in women participation across the region. Thus, in South-East Asia, East and North-East Asia and Central Asia 52-53% of all participants are female, while in South Asia, West Asia and the Pacific the enormous disparities exist, showing that male participants comprise 72%, 71% and 65% respectively.

![Participant distribution by region, 2011-2015](image)

The chart shows the distribution of participants by region from 2011 to 2015. South East Asia and South Asia have the highest proportion of female participants, while Central America and North America have the lowest.

![Female to Male ratio over time, sessions 1-25](image)

*Figure 6  Female to Male ratio over time, session 1-25*
The usage of e-learning facility can be classified as steady since its launch with several spikes in web sessions and page views over the period (Figure 7). To date, website traffic has reached roughly 6,770 visitors participating in over 18,000 web sessions. The website has had over 143,000 page views, 36.9% of which were conducted by new visitors. Spikes in visitation often occur during or just after major environment-related UN conferences or the launch of significant outcome documents.

![Figure 7 Number of web sessions and pageviews over the period of June 2012 – July 2015](image)

The majority of visitors originate from within the Asia-Pacific region, but the website has had visitors from across the world. The highest number of visitors originate from Thailand, Viet Nam, India, Malaysia and the United States as shown in Figure 8. The biggest number of sessions is mainly run from within Thailand. This country also leads in the number of new users, accounting for 12.08% of all new registered users, followed by the United States of America – 8.38% and India – 6.98%. The average session duration is 11.31 minutes, while the longest average session duration is observed in Tonga – 50.38 minutes, and the shortest in Lithuania – 0.11 minutes.

![Figure 8 Number of visitors across the world](image)

![Figure 9 Usage of e-learning facility by country. Top-10 countries by session](image)

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10 Web analytics started in July 2012
Partnerships

The multiplier effect is achieved through 12 ‘Training Partner Nodes’ throughout the region, and commitment of those nodes to serve as implementing agencies for the e-learning courses at the national level. Partnerships were established with the following organizations:

- Centre for Capacity Building, Sustainable Development Policy Institute (SDPI) – Pakistan
- Ministry of Natural Resources and Environment (MONRE) – Laos PDR
- Green Economy and Green Growth Myanmar Association – Myanmar
- The Sustainability Platform (TSP) - India
- Vietnam-Korea Centre for Environmental Research and Training (VKCET) – Viet Nam
- National Green Growth Secretariat - Cambodia
- Department of Environment and Natural Resources (DENR) - Philippines
- Asian Institute of Technology (AIT) – Thailand
- Coordinating Secretariat for Science, Technology and Innovation – Sri Lanka
- Coalition for Green Economy and G-Global Development– Kazakhstan
- University of Brunei Darussalam (UBD) – Brunei Darussalam
- University of Malaya, Centre for Poverty and Development Studies (UM CPDS) - Malaysia

Over the past years, the partnerships with Asia Pacific Round Table on SCP, UNEP (Green Economy), UNIDO (Green Industry), ILO (Green Jobs), UN ESCWA, ESCAP Asia-Pacific Centre for Technology Transfer, SINGG, IGES, AIT, SWITCH Network Facility and GTZ have been built.

The newly signed (July 2015) MOU partnership with the Regional Environmental Center for Central (CAREC)\(^\text{11}\) Asia targets green growth capacity building.

\(^{11}\) CAREC was established in 2011 by Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan, the UNDP and the European Commission (EC) to promote multi-sector cooperation in addressing environmental issues in Central Asia
After the completion of the e-learning programme, participants are emailed an online questionnaire to evaluate the tool’s usability and functionality. Initially, the questionnaire was located at Survey Monkey (http://www.surveymonkey.com/s/NQ6NRBZ and http://www.surveymonkey.com/s/NQZXJ92). Since basic free account in survey monkey is very

Figure 10 Partner Nodes across the region
limited (e.g. not more than 10 questions per survey, view 100 responses per survey, etc.) it was decided to transfer questionnaire to Google Forms in 2013. Please follow the link for sample questions

docs.google.com/forms/d/1DGEVNmvcyG5v-IPazDVTUS1k37adlFY3LatKq8BoKC0/viewform

The questionnaire has 23 questions, covering different aspects of e-learning tool starting from impression from operation of the e-learning facility and ending with sharing specific recommendations. **54% of all respondents indicated that the tool material was very relevant to their job, and 29% stated that it was relevant.** Some of the comments included “The methods used are quite impressive and stimulate the interest to learn and follow modules. The coverage of the components is quite comprehensive”\(^\text{12}\) and “The modules develop in a consistent manner on the subject and provide objective arguments and visions.”\(^\text{13}\)

Of all surveyed individuals 88% did not experience any difficulty logging into the system, while 10% had difficulties, and 2% stated that difficulties were appearing from time to time. People, who experienced difficulties with the system, originate from South and South-East Asia, as well as African countries. 98% found that the user manual which is sent in the first week to all participants clearly explain the course objectives, methodology and certification requirements. Majority of respondents (93%) stated that quizzes adequately test the information found in the modules, while there also was a recommendation to make questions “more comprehensive and perhaps include more questions.”\(^\text{14}\)

Analysis of the responds regarding the appearance of the course showed that the ease of navigation of modules is very good or good (38% each), and 20% said that it is satisfactory. 34% stated that animation and graphics was very good and 56% that it was good. However, there were many comments regarding the audio. Even though 29% said that pronunciation of audio was very good and 36% that it was good, as well as 34% indicated that speed of audio recording was very good and 37% that was good, individual comments include “Avail of better text-to-voice software to enhance the voice quality”\(^\text{15}\) and “the auto recording pronunciation sounds excessively robotized and hard to follow at moments.”\(^\text{16}\)

Information, provided through presentations was very good for 44% and good for 32% of respondents, while participants recommended enabling the text section to be more easily read and lectures to be downloaded as pdf or text format.

At the same time participants expressed their interest to study topics as shown in figure 11. Among other topics proposed were Financial Mechanisms, Climate Finance, Mainstreaming green growth in national strategic planning and development processes, Green business model canvas for SMEs, and Integrated Water Resource Management.

\(^\text{12}\) Respondent Dr. M.T.Kumidini, 4/17/2014
\(^\text{13}\) Respondent Ana Deligny, 11/14/2014
\(^\text{14}\) Respondent Alison Noerhrbass, 6/6/2014
\(^\text{15}\) Respondent Philip Nalangan, 9/9/2014
\(^\text{16}\) Respondent Ana Deligny, 11/14/2014
Figure 11 Additional topics that participants would like to see on-line e-learning facility

Among all the materials presented, the most useful and effective component was policy papers, followed by case studies, videos and additional reading (figure 12). The least useful for the participants was discussion forum. Despite majority of surveyed (93%) showed that discussion questions were relevant to the information found in the modules, however, many mentioned that there was a very low level of engagement and participation.

Figure 12 Level of usefulness and effectiveness of specific components of the e-learning tool
When asked what kind of additional components participants can suggest, there were several good ideas, which can be included into the upcoming e-learning facility upgrading, such as:

- **Gurunath Ramesh**, *Advanced Business Consultants*, “Demo of live activities that are at present happening across the globe, as critical Green activities, will help us to learn and understand on recent trends”
- **Kelly Dorkenoo**, *Lund University*, “Make the platform more reactive, and possibly add interviews with specialists”
- **Alison Noehrbass**, *University College London*, “Some of the modules included interactive activities that I found refreshing - perhaps including more of these”
- **Raymond Makhanda**, *National Cleaner Production Center of Zimbabwe*, “Make certificates more authentic, respected and more academic”
- **Mamunur Rahman**, *Ministry of Industries of Bangladesh*, “Alumni group can be formed with the participants”

In general, majority of the partakers agreed that the course provided them with a good basis for understanding of Low Carbon Green Growth concept and gave a comprehensive knowledge on the topic. 73% of partakers indicated that they were “satisfied” with the overall experience from using ESCAP on-line e-learning, and 100% would recommend the course and facility to their colleagues.

The following positive feedback has been obtained from several participants:

- **Ana Deligny**, *Organization for Economic Cooperation and Development (OECD)*, “I liked the idea of drafting a case study. This kind of direct interaction is lacking on other on-line e-learning courses”
- **Iulia Trombitcaia**, *United Nations Economic Commission for Europe (UNECE)*, “This will help me to prepare sections on legal and policy frameworks for green economy for future UNECE Environmental Performance Reviews”
- **Mamunur Rahman**, *Ministry of Industries of Bangladesh*, Applying the knowledge from the e-learning “in making country policy strategy in green business, especially in developing SME and Industrial Policy of Bangladesh”
- **Pouth Jean**, *Ministry of Environment Protection and Sustainable Development of Cameroon*, “First of all I will share this experience with my boss by elaborating report on my training”
- **Mrinmoy Das**, *Human Network India*, “I am already engaging in disseminating the course to my network members”
- **Eugene Eccli**, *University of Jihan*, “Have any parts of this course been translated into simplified Mandarin? I’d like to use segments with my students”
- **Mahalmadane Aly Toure**, *Energy Business Consultant*, “I will use arguments provided in the course to justify the necessity to adopt efficiency technologies and renewable energy solutions to my partners”
- **Akhteruzzaman Sano**, *Save the Earth Cambodia*, “As a climate change and disaster risk management practitioner, I will invest this knowledge in project development and line-
development processes, as I am also part-time lecturer in the university, I will share this messages to my master program students where relevant”

- **Dr. M.T.Kumudini, Secretariat for Science, Technology and Innovation of Sri Lanka**, “I am entrusted with setting up a virtual forum on green growth in the country to facilitate coordination and monitoring of activities happenings in the state on a cross sectoral basis. The e-learning course has given me confidence in pursuing the task”

**Cost breakdown**

The figures shown in Table 1 below indicate that the online e-learning platform has been cost effective so far. Moreover, the expenses incurred have reduced over time as the initial overhead costs were covered during the initial launch phase.

Table 1. Cost breakdown for the e-learning for the period November 2011 to October 2014.

<table>
<thead>
<tr>
<th>Costs</th>
<th>Amount in $US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of Green Growth on-line e-learning facility (one-off)</td>
<td>$2,500</td>
</tr>
<tr>
<td>Hosting and maintenance services (300 per annum.)</td>
<td>$900</td>
</tr>
<tr>
<td>Development of courses (20 x 461 slides in total to date)</td>
<td>$9,220</td>
</tr>
<tr>
<td>Consultancy fees (50% of total capacity building time at present)</td>
<td>$100,000</td>
</tr>
<tr>
<td><strong>Total spent</strong></td>
<td><strong>$112,620 (max)</strong></td>
</tr>
</tbody>
</table>

Compared to on-site training, the on-line facility saved (60,000 USD per on-site course in average per 17 on-line sessions per year) $1,020,000

Compared to on-site training, the carbon efficient on-line facility saved CO₂ for the mentioned 17 courses (average 25 tons CO₂ emissions per course) 425 tons CO₂

**Total saved (on-line versus on-site training)** | -$907,380 (min)
Market study

Comparative study of e-courses available on the market

There are 13 other e-learning providers delivering courses related to climate change and environmental sustainability available in the market. Some are facilitated, and some are at participants own pace. The majority issue a certificate of completion after a final quiz or exam. An overview of the e-learning course offerings is shown in Table 2.
Table 2. Comparative e-learning programmes available on the market

<table>
<thead>
<tr>
<th>E-learning provider</th>
<th>Cost</th>
<th>Course name</th>
<th>Course description</th>
<th>Duration</th>
<th>Teaching materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNESCAP Environment and Development Division</td>
<td>Free</td>
<td>Fundamentals of Green Growth</td>
<td>This course will introduce participants to Green Growth, a policy focus for Asia and the Pacific that emphasizes ecologically sustainable economic progress to foster low-carbon, socially inclusive development. <a href="http://www.greengrowth-elearning.org/lms/">http://www.greengrowth-elearning.org/lms/</a></td>
<td>6 weeks</td>
<td>Web-based Participants are coached by an on-line trainer, and have continuous access to an on-line reference library with reading and video materials.</td>
</tr>
<tr>
<td></td>
<td>Not offered anymore</td>
<td>Water Security in Asia and the Pacific</td>
<td>The first module of the e-learning course is aimed to share practical solutions to build sustainable and resilient water management systems to foster awareness, engagement, demand and application of appropriate systems and technologies among policy makers, local authorities and community stakeholders. This module focuses on one aspect of enabling policies to promote wastewater management and sanitation in South-east Asia to contribute to the water security in the region. <a href="http://www.greengrowth-elearning.org/lms/">http://www.greengrowth-elearning.org/lms/</a> Registration through: <a href="mailto:elearning@rrcap.ait.asia">elearning@rrcap.ait.asia</a></td>
<td>1-2 hours per week</td>
<td>Web-based</td>
</tr>
<tr>
<td>Organization</td>
<td>Fee</td>
<td>Course Title</td>
<td>Description</td>
<td>Duration</td>
<td>Format</td>
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<tr>
<td><strong>Low Carbon Green Growth Roadmap</strong></td>
<td>Free</td>
<td></td>
<td>This course explores how a transformation to Green Growth will require a bold and ambitious transformation of the economic system. The “visible structure” of the economy, comprising such physical infrastructure as transport, building and energy systems, together with the “invisible structure”, which encompasses market prices, governance, regulations and lifestyles, have to be re-oriented to resource efficiency.</td>
<td>6 weeks, 1-2 hours per week</td>
<td>Web-based with reading and video materials</td>
</tr>
<tr>
<td><strong>UN CC:Learn</strong></td>
<td>Free</td>
<td>Introductory E-Course on Climate Change</td>
<td>UN CC:Learn is a partnership of more than 30 multilateral organizations supporting systematic and results-oriented learning on climate change and has gathered 10,000 registrations from participants from all 195 Countries Party to the United Nations Framework Convention on Climate Change (UNFCCC). The online platform provides a ‘one-stop-shop’ to access relevant learning materials, activities and services offered by the UN on climate change.</td>
<td>Each module takes an average of 2 hours</td>
<td>Web-based Downloadable power point presentations available that can be used for offline study or for training purposes</td>
</tr>
<tr>
<td><strong>UNEP &amp; UNITAR</strong></td>
<td>USD 600</td>
<td>Introduction to Sustainable Consumption and Production in Asia</td>
<td>The course is designed to assist policymakers from the region in developing, implementing, monitoring and evaluating policies supporting a transition towards SCP. Participants will learn about different concepts of SCP, regional, national and sector-specific challenges and opportunities to implement policies.</td>
<td>8 weeks, 01 Sep - 24 Oct 2014</td>
<td>Web-based</td>
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</table>
| Partnership for Action on Green Economy (PAGE), UNITAR, UNDP, ILO, UNIDO, UNEP | USD 600 | **Introduction to a Green Economy - Concepts and Applications**  
The course is composed of 5 modules:  
Module 1: Introduction to a green economy: Rationale, concepts and principles  
Module 2: Enabling conditions for advancing a green economy  
Module 3: Greening the economy: Sectors and strategies  
Module 4: Developing a balanced and inclusive green economy  
Module 5: International developments and support to advance a green economy  
The course is delivered within the framework of the Partnership for Action on Green Economy (PAGE), a joint initiative by UNEP, ILO, UNIDO, UNDP and UNITAR which aims to provide comprehensive assistance to countries seeking to develop and implement inclusive green economy strategies.  
In this course participants will learn about different concepts and facets of the green economy, as well as global, national and sector-specific challenges and opportunities to advance low-carbon, resource efficient and socially inclusive development.  
5 hours pw | Reading an e-book and interactive exercises, discussion forums, and an applied case study. |
| ILO | 800 Euros | **Green Jobs for Sustainable Development: Concepts & Practices**  
This interactive e-learning course aims to improve the understanding of ‘green jobs’ key concepts and definitions as part of the contribution of the world of work to sustainable development, through a review of tools, selected literature and on-going practices. Special attention is given to the approaches of the ILO Green Jobs Programme across specific economic sectors and at country level.  
http://apgreenjobs.ilo.org/events/ilo-international-training-centre-green-jobs-e-learning-course-2015 | 8 weeks  
(4 modules) | Web-based (a review of tools, selected literature and on-going practices) |
<table>
<thead>
<tr>
<th>Organization</th>
<th>Access</th>
<th>Course Title</th>
<th>Description</th>
<th>Duration</th>
<th>Platform</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNESCO</td>
<td>Free</td>
<td><strong>Teaching and Learning for a Sustainable Future</strong></td>
<td>The modules follow 4 main themes: 1. Introduction to global realities 2. Sustainable development across the curriculum 3. Contemporary issues 4. Teaching and learning strategies. This course provides professional development e-learning for student teachers, teachers, curriculum developers, education policy makers, and authors of educational materials. For use in pre-service teacher courses as well as the in-service education of teachers, curriculum developers, education policy makers, and authors of educational materials. Modules illustrate ways in which Education for Sustainable Development can be integrated into all areas of the curriculum, especially into cross curriculum themes such as health and consumer education. <a href="http://www.unesco.org/education/tlsf/">http://www.unesco.org/education/tlsf/</a></td>
<td>100 hours (divided into 27 modules)</td>
<td>Web-based</td>
</tr>
<tr>
<td>FAO</td>
<td>Free</td>
<td><strong>Incorporating Climate Change Considerations into Agricultural Investment Programmes</strong></td>
<td>The course consists of 7 lessons: Lesson 1. Overview Lesson 2. Basics of adaptation and mitigation in the agricultural sectors Lesson 3. Incorporating climate change at the conceptualization stage Lesson 4. Preparing a climate change-sensitive concept note Lesson 5. Rapid assessment of the impacts of climate change on the project area Lesson 6. Incorporating climate change considerations at the preparation stage Lesson 7. Incorporating climate change into project supervision and evaluation. The course is useful for investment project formulation practitioners, national and international staff and consultants, as well as government staff involved in mobilizing investment for agriculture and rural development. <a href="http://www.fao.org/elearning/#/elc/en/course/FCC2">http://www.fao.org/elearning/#/elc/en/course/FCC2</a></td>
<td>Lessons are 30 to 60 minutes</td>
<td>Web-based</td>
</tr>
<tr>
<td>Free</td>
<td>Free</td>
<td><strong>Climate Change and Food Security</strong></td>
<td>The course consists of 4 lessons: Lesson 1. Overview This course provides an overview of the impacts of climate change on food security. It also introduces climate-smart agriculture and practices that contribute to climate change adaptation, mitigation, food security and development.</td>
<td>3.5 hours</td>
<td>Web-based Also available for download and CD-ROM</td>
</tr>
<tr>
<td>United Nations University (UNU)</td>
<td>Free</td>
<td><strong>Sustainability in Asia and the Pacific</strong></td>
<td>UNU-IAS provides online postgraduate courses, as well as training modules and programmes for professionals. Hosted on the Moodle Learning Management System maintained by the University of Hawai‘i. The course offers advanced professionals and students interested in environmental studies, planning, and resource conservation and management an opportunity to learn from a diverse faculty from each of the participating institutions as well as distinguished guest lecturers from regional and international organizations.</td>
<td>15 sessions 2.5 hours pw</td>
<td>Implemented in real-time over video-conferencing</td>
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<tr>
<td>World Bank e-Institute</td>
<td>Free</td>
<td><strong>Low Carbon Development: Planning &amp; Modelling</strong></td>
<td>The e-Institute provides more than 45 facilitated and self-paced courses that address complex real-world problems in priority areas such as governance, health, cities, climate change, and public private partnerships. Participants do not receive a formal certificate of completion or feedback on their work. This course introduces participants to climate change mitigation, explores the concepts surrounding low carbon development planning on an economy-wide basis and takes a detailed look at what this means in the power and transport sectors and for household electricity use.</td>
<td>Flexible deadlines for completion 4 weeks 3 hours pw</td>
<td>Web-based Monthly podcasts and webinars, video success stories, multimedia toolkits, and other resources.</td>
</tr>
<tr>
<td>Free</td>
<td><strong>Policy Instruments for Low Emissions Development</strong></td>
<td>This course will assist participants to plan, design and implement these policy instruments to help spur the country into a low emissions development path.</td>
<td>4 weeks 3 hours pw</td>
<td>Web-based</td>
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<tr>
<td>Free</td>
<td><strong>Fundamentals of Climate Change</strong></td>
<td>Covers the scientific basis of climate change, the observed and projected changes and impacts, together with, the approaches and responses development professionals and practitioners may use to address climate change within their work.</td>
<td>4 weeks 3 hours pw</td>
<td>Web-based</td>
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<tr>
<td>Free</td>
<td><strong>Investment Planning toward Low Emissions Development</strong></td>
<td>This course compiles knowledge and lessons learned during the design and implementation of investment plans funded through the Climate Investment Funds, Clean Technology Fund and the Scaling Up Renewable Energy Program in Low Income Countries (SREP).</td>
<td>4 weeks 3 hours pw</td>
<td>Web-based</td>
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<tr>
<td>Free</td>
<td><strong>Cities and Climate Change Leadership</strong></td>
<td>This course discusses how cities and urban regions can lead climate actions and mainstream climate mitigation and adaptation into their development plans.</td>
<td>4 weeks 3 hours pw</td>
<td>Web-based</td>
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<tr>
<td>Free</td>
<td><strong>Energy Sector Strategies to Support Green Growth</strong></td>
<td>This course covers essential aspects of renewable energy and energy efficiency policies and discusses how they can contribute to green growth strategies.</td>
<td>4 weeks 3 hours pw</td>
<td>Web-based</td>
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<tr>
<td>Free</td>
<td><strong>Economics of Climate-Resilient Development</strong></td>
<td>This course will teach the basics for developing economically viable climate-resilient plans.</td>
<td>4 weeks 3 hours pw</td>
<td>Web-based</td>
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<tr>
<td>Coursera</td>
<td><strong>Introduction to Sustainable Development</strong></td>
<td>An education platform that partners with top universities and organizations worldwide, to offer Massive Open Online Courses (MOOCS) for anyone to take. This preview course, &quot;Introduction to Sustainable Development&quot; will give you an understanding of the key challenges and pathways to sustainable development - that is, economic development that is also socially inclusive and environmentally sustainable. <a href="https://www.coursera.org/courses?orderby=current">https://www.coursera.org/courses?orderby=current</a></td>
<td>10 weeks 3-5 hours pw</td>
<td>Pre-recorded weekly video lectures (5-20 mins), discussion forums, homework assignments, and online exams.</td>
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<tr>
<td>Free</td>
<td><strong>The Age of Sustainable Development</strong></td>
<td>This course provides an introduction to the interdisciplinary field of sustainable development, drawing on the most recent developments in the social, policy, and physical sciences.</td>
<td>10 weeks 3-5 hours pw</td>
<td>Instructor will hold 8-10 real-time Google Hangouts for students to ask</td>
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<tr>
<td>Free</td>
<td><strong>Climate Change in Four Dimensions</strong></td>
<td>This course views climate change from a variety of perspectives at the intersection of the natural sciences, technology, and the social sciences and humanities.</td>
<td>10 weeks 3-5 hours pw</td>
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<td>Free</td>
<td><strong>Climate Literacy: Navigating Climate Change Conversations</strong></td>
<td>Tackles the scientific and socio-political dimensions of climate change. This course introduces the basics of the climate system, models and predictions, human and natural impacts, mitigative and adaptive responses, and the evolution of climate policy.</td>
<td>10 weeks 3-5 hours pw</td>
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<tr>
<td><strong>Sustainable Development Solutions Network (SDSNedu)</strong> An independent non-profit organization</td>
<td><strong>The Age of Sustainable Development</strong></td>
<td>The SDSN was set up at the request of UN Secretary-General to promote sustainable development and comprises a network of over 200 universities and policy think-tanks around the world. SDSNedu brings together the world’s foremost experts on sustainable development – including health, education, climate change, agriculture and food systems, sustainable investment, and other related fields – to offer a comprehensive core curriculum, equipping the next generation of “Sustainable Development Practitioners” to take on the complex challenges facing our planet.</td>
<td>10 weeks 3-5 hours pw</td>
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<tr>
<td>Free</td>
<td><strong>Climate Change Science and Negotiations</strong></td>
<td>A two-semester course: First semester is based on the results from the Deep Decarbonization Pathways Project (DDPP), a global initiative to show how countries can transition to a low carbon economy by 2050, and how the world can stay within the 2°C limit. The second semester of the course, will be a dynamic online climate change negotiation, modeled on the real negotiations under the United Nations Framework Convention on Climate Change (UNFCCC).</td>
<td>10 weeks 3-5 hours pw</td>
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<tr>
<td>FutureLearn</td>
<td><strong>Climate Change: Challenges and Solutions</strong></td>
<td>FutureLearn partners include over 20 of the best UK and international universities, as well as institutions.</td>
<td>8 weeks 3 hours pw</td>
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<tr>
<td>Course Title</td>
<td>Description</td>
<td>Duration</td>
<td>Platform</td>
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<tr>
<td>A private company wholly owned by the U.K.’s Open University</td>
<td>This course aims to explain the science of climate change, the risks it poses and the solutions available to reduce those risks. With a huge archive of cultural and educational material, including the British Council, the British Library, and the British Museum.</td>
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<tr>
<td>Free</td>
<td><strong>Water for Livable and Resilient Cities</strong></td>
<td>7 weeks</td>
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<tr>
<td>EdX</td>
<td>This course demonstrates how water can be used in the planning of cities to improve liveability in the face of climate change and population growth.</td>
<td>4 hours pw</td>
<td>Web-based</td>
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<tr>
<td>Free</td>
<td><strong>Sustainability in Everyday Life</strong></td>
<td>6 weeks</td>
<td>Web-based</td>
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<tr>
<td>Free</td>
<td>This course has 5 key themes: Chemicals, globalization, climate change, food and energy, and explores the challenges that people face day-to-day managing choices relating to sustainability.</td>
<td>6 hours pw</td>
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<tr>
<td>Free</td>
<td><strong>Modelling Climate Change</strong></td>
<td>8 weeks</td>
<td>Web-based</td>
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<tr>
<td>Free</td>
<td>This course takes a quantitative approach to the science of global warming and will enable students to understand the greenhouse effect, the planet's carbon cycle, and how burning fossil fuel affects that cycle; and to evaluate the potential severity of humans’ impact on Earth’s climate.</td>
<td>5 hours pw</td>
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<tr>
<td>Conservation Training</td>
<td><strong>Climate Change: Reducing Emissions from Deforestation and Forest Degradation and Conserving and Enhancing Forest Carbon Stocks (REDD+)</strong></td>
<td>Flexible</td>
<td>Web-based</td>
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<tr>
<td>Free</td>
<td>Includes modules on: Conservation action planning Conservation measures</td>
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<tr>
<td>Free</td>
<td>ConservationTraining is an open and free learning community with 17,000 users from over 200 countries enrolled. It offers conservation-based training tools from the Nature Conservancy and has over 400 hours of formalized e-learning content across a variety of categories such as REDD+ (Reducing Emissions from Deforestation and Degradation), Measures, Geographic Information Systems, Protected Area Management, Reef Resilience, and Professional Development in areas such as Communications, Project Management, Management and Leadership and Technology.</td>
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UNESCAP e-learning facility compared to other online courses

This work looked at 26 more or less similar on-line e-learning programmes focusing on sustainable development and climate change. Apart from the UNESCAP, there are 9 other UN agencies, which have developed and offer online e-learning courses (UNEP, UNITAR, UNDP, UNIDO, ILO, UNESCO, FAO, UNU and the World Bank). Additionally there are many other Massive Open Online Courses (MOOCs) developed in collaboration between different organizations, and universities, such as Coursera, SDSNedu, FutureLearn, EDx, Conservation Training.

UN CC: Learn (the One UN Climate Change Learning Platform) is a partnership of 33 multilateral organizations supporting countries in designing and implementing country-driven, results-oriented and sustainable learning to address climate change. So far the platform offers one e-course on Introduction to Climate Change, a series of introductory learning modules, and resource guides for advanced learning on climate change and a map with good learning practices. Since the main focus of UNCC: Learn is climate change, it does not compete with ESCAP on-line e-learning. EDPS/EDD has already partnered with this platform\(^\text{17}\), however a better collaboration to promote ESCAP Green Growth on-line e-learning platform is required.

The UNITAR provides a wide range of courses on different topics, including environment-related courses developed and run in partnership with other UN agencies. Thus, the most similar e-learning programmes are the Introduction to Sustainable Consumption and Production in Asia offered by UNEP in conjunction with UNITAR, and Introduction to a Green Economy - Concepts and Applications, offered by Partnership for Action on Green Economy (PAGE). UNEP’s course provides participants with basic understanding of SCP concepts as well as trains them to design SCP policies in support of sustainable development. PAGE course explores basic principles and conditions for the green economy, which makes its content quite similar to UNESCAP e-learning. Main disadvantage of these courses is a high fee, which ranges between $600 and $800, and 800 euros for ILO courses on green jobs. Bearing in mind that many Asia-Pacific countries are developing and often cannot afford taking expensive courses, ESCAP e-learning can take an advantage of offering free on-line e-learning.

At the same time UNITAR also offers a number of free courses, such as Introduction to environment, natural resources and UN peacekeeping operations and Environment, natural resources and UN peacekeeping operations: Restoring Governance of Natural Resources. Both courses mainly focus on the role of natural resources and their governance in the conflict and the fragility of states. This is not the focus of ESCAP e-learning, thus there cannot be any competition with these free courses.

Main competitor of ESCAP e-learning can be the World Bank e-Institute which offers a wide range of different free on-line courses both facilitated and self-paced. So far, it offers at least 7 environment-related courses lasting for 4 weeks period each. Self-paced e-courses, such as Energy Sector Strategies to Support Green Growth are flexible in timing, however participants will not obtain any certification upon completion. Facilitated courses such as Economics of Climate-

\(^{17}\) According to the Partners’ list available at UNCC: Learn, the focal point from UNESCAP is Chief of EDPS.
**Resilient Development** have assigned dates of course duration, within which participants are required to complete all their modules and assignments, if any, and upon successful completion obtain WB Group certification. Main difference of these courses from the e-learning offered by the ESCAP is that the World Bank courses are not region-specific (e.g. Asia and the Pacific, Europe, etc.), and provide with a wide range of policies available, while ESCAP e-learning puts a special emphasis on Asia-Pacific region and the applicability of specific policies to region states.

United Nations’ think tank organization – the United Nations University (UNU) also offers a number of on-line courses, including the *Sustainability in Asia and the Pacific*, which is a semester-based Advanced Seminar on International Environmental Studies implemented by a network of universities in Asia-Pacific. A close consideration of the courses gives an insight on its mainly academic orientation.

While all above considered courses are mainly web-based, there are a number of courses which offer an offline version of their e-learning (UNCC: Learn and FAO offer downloadable versions of course content).

Among other non-UN courses it’s worth considering the SDSNedu courses, which have been launched upon the request by the UN Secretary-General, and claim to be a Global Initiative for the United Nations. So far, there are 4 courses available. The flagship course is *The Age of Sustainable Development* by Jeffrey Sachs, which is also available at Coursera. This e-learning uses EdCast platform, which makes the courses highly interactive and linked to other university courses hosted at EdCast cloud.

**Unique features of UNESCAP’s e-learning programme**

The main feature of the ESCAP e-learning is that the course has been designed for the policy makers of Asia and the Pacific, with due consideration of region specifications and characteristics. Bearing in mind that one size does not fit all, the course takes an integrative approach and provides a wide range of policy instruments which can be adopted in region with analyzing best practices of the countries from the region. Animations have been designed with account of possible internet connection speeds throughout Asia-Pacific.

Building on the mandate to build the capacities of policy makers and other key stakeholders\(^\text{18,19,20}\), courses are offered free of any charge, and the completion is acknowledged by the certificate.

Requirement to develop a case study allows participants to practically apply the knowledge they gained in the courses through analyzing specific policies implemented or developing their own recommendations of policy instruments to introduce in their home countries. This also ensures that participants are able to use their knowledge and capacity in strategic environmental planning.

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\(^{18}\) EDD/ESCAP Strategic Framework 2014-2015

\(^{19}\) Strategic Framework 2016-2017

\(^{20}\) ESCAP Executive Secretary’s Guidance Note on the Secretariat’s Strategic Direction for 2015-2020
A wide reach is ensured through the on-line platform, which makes the courses highly inclusive, and its open format ensures that the material is reachable to all people all around the world, who wish to enhance their capacities. The facility has already gained an audience from among North European, South and North American and African users.

Information presented through the modules is not overloaded with many technical definitions and information, and is easy to understand to people with different backgrounds. Recommended time of 1-2 hours per week enables learning process without interruption from main job. Text boxes with scripts of voiceover give non-English speakers a better understanding of the information, and Arabic and Russian versions ensure a wider reach throughout the region.

United Nations ESCAP certification adds the credibility to the skills of the professionals successfully completing the course, and may contribute to their performance evaluations, promotion at work and their ability to develop effective polices at a country level.

Lessons learned
The ESCAP methodology for developing e-learning courses has recommended itself as working and very successful, and has also been adopted by other institutions, such as Statistical Institute for Asia and the Pacific (SIAP).

Since ESCAP e-learning has been launched in 2011, it became mature enough and capable of providing support for steadily increasing interest and number of total users over time and across the globe. However, there are several aspects that should be addressed in a timely manner:

1. The environment in which the e-learning facility is operating is highly changeable. This involves both changes in the topics and information we offer, as well as the facility that we use for hosting our information.
2. All the processes taking place at the on-line facility should be automated and accounted. The statistics is vital; however at current stage the platform misses a huge portion of the information about the users.
3. It is important to create a community of practice, who will be connected with each other through a platform. Even though this target has been mentioned in first two phases of the programme, and the communities of practice have been created locally, they are not connected with each other, or the connection is often lost in time. This problem should be addressed. The e-learning facility should become a real platform, where green growth practitioners can connect with each other, exchange with experience and develop common projects.
The way forward

Under Section 23: Regular Programme of Technical Cooperation funding the following improvements will be implemented by the end of 2015:

- Back-end and front-end modernization of the e-learning facility;
- Rebranding/renaming of the facility (e.g. Transformations for Sustainable Development);
- Expansion of the scope of courses available: updating the Low Carbon Green Growth Roadmap course, and developing new courses such as Liveable cities and Water Security in Asia and the Pacific;
- Translation of e-learning modules to Russian language for ESCAP Russian-speaking member-States;
- Working closely with subregions, namely Central Asia in collaboration with Regional Environmental Center for Central Asia (CAREC).

It is worth to consider expansion of ESCAP partnerships with other UN agencies and partnerships (PAGE) who offer e-learning courses for better promotion of ESCAP Green Growth e-learning, and exchange of experience.

Bearing in mind current achievements on world ICT market, expansion of the e-learning from web-site based to mobile format is critical. This will not only bring along the convenience to users in using/completing the courses, but also may potentially host the communication platform for the future community of practice. At the moment, most of the participants after completion the course don’t have any further communications with neither the ESCAP Green Growth Team nor with other participants of their on-line session. Development of mobile application may be developed through organizing the hackathon\textsuperscript{21}, including in partnership with other divisions or organizations to reduce the organizational costs. Hackathon can be a cheap option for developing several mobile applications, which meet the technical specification and characteristics provided by the organizers. After completion of the hackathon event, finished mobile application will belong to organizers, and thus can be used.

\textsuperscript{21} Hackathon is an event, which typically lasts for several days, in which a large number of people meet to engage in collaborative computer programming (Oxford Dictionaries)