

Low Carbon Development
Summary Sheets

Green jobs in a low carbon economy

Key message: The transition to a low carbon economy offers significant potential to increase productivity, and create green and decent jobs in developing countries, mainly in the renewable energy, sustainable agriculture, and forestry and waste management sectors.

However, macro-economic and sectoral-level analyses have not been undertaken to understand the net job impacts (including winning and losing sectors) of low carbon transition in developing countries. A key challenge is to address poor working conditions and skills shortages.



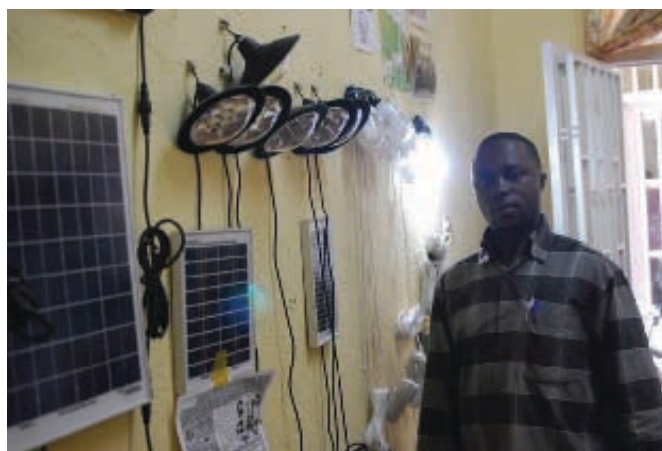
Introduction

The groundbreaking UNEP/ILO/IOE/ITUC study in 2008¹ has galvanised the concept of green jobs from economic and policy perspectives. The bulk of documented growth in green jobs has so far occurred mostly in developed countries, and some rapidly developing countries such as Brazil, India and China. However, green jobs are also beginning to be seen in other developing economies. These are in key sectors such as renewable energy that can deliver 'quick wins' on the employment and development fronts.

1. The leading sectors for green jobs are concentrated in sectors/activities directly linked to energy use, sustainable agriculture, forestry and waste management, and recycling and recovery of raw materials. In China, the renewable energy sector generates output worth USD17 billion and employs 1 million people. Of these, 600,000 are employed in making and installing solar thermal products, such as solar water heaters². India could generate 900,000 jobs by 2025 in biomass gasification. On average, organic agriculture uses 30% more labour than conventional production. In Mexico, the number of jobs created through organic agriculture increased from 13,785 in 1996 to 172,251 in 2007³. According to the Institute of Green Economy in India⁴, an annual expenditure of USD1 million in sustainably managed forestry has the potential to create between 500 and 1,000 full-time jobs in developing countries and between 20 and 100 jobs in developed countries. Recycling and waste management employs an estimated 10 million people in China and 500,000 in Brazil. This sector is expected to grow rapidly in many developing countries in the face of escalating commodity prices, urban population and industrialisation.

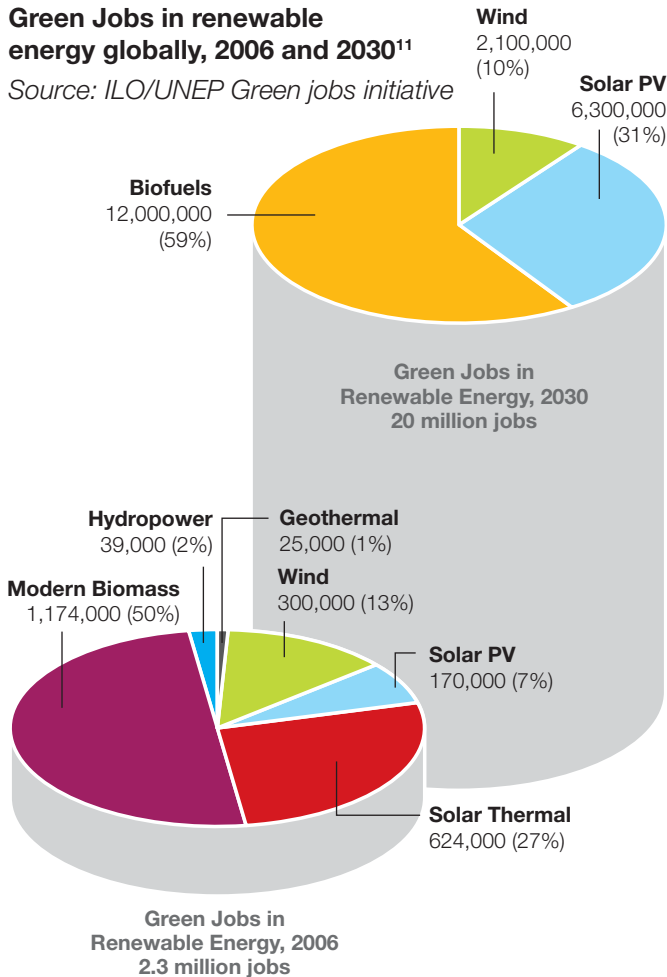
2. Renewable energy and sustainable fuels have provided a major boost for development and poverty reduction through green jobs. In Bangladesh, the Grameen Shakti movement has helped to create jobs (see the case study on the next page) by installing over 220,000 solar photovoltaic (PV) panels, providing indispensable electricity to light and power homes in rural areas⁵. Brazil's biofuels programme has saved around USD100 billion in external debt and created, directly and indirectly, an estimated 1.3 million jobs in rural areas⁶.

3. Green jobs have a greater so-called 'knock-on' (i.e. multiplier) effect on the rest of the economy than conventional sectors. Green jobs include direct employment, for example, in the manufacture, installation and operation of renewable energy technologies, and indirect jobs in steelmaking for wind turbine gearboxes and towers, composite chemicals for blades and building materials for the foundations. Studies in the US⁷ and Europe^{8,9,10} show that the net impact of substitution, including winning and losing sectors, from conventional to greener sectors is **positive** mainly due to longer and diversified supply chains, higher labour intensity and higher net-profit margins for greener sectors/activities. These findings are not conclusive in developing countries as detailed sectoral level analyses have not been undertaken.



Green Jobs in renewable energy globally, 2006 and 2030¹¹

Source: ILO/UNEP Green jobs initiative



decent jobs' cited by the UNEP/ILO/IOE/IIUC report¹¹ include low-wage jobs installing solar panels, and jobs in electronics recycling and waste management where there is inadequate occupational safety and child labour is used. In many instances, these sectors are defined by their informal nature, difficulty, and occupational and health hazards. The International Labour Organization (ILO) estimates that 1.4 million out of 3.5 million core environment-related jobs can be considered 'green' as they meet decent work standards in Bangladesh¹².

Case study Bangladesh

Through an innovative microcredit scheme, Grameen Shakti (1996) in Bangladesh has embarked on an ambitious programme to provide a range of affordable renewable energy technologies to rural households. The employment and other economic opportunities of the programme have been very significant. At least 20,000 jobs have already been created with the current uptake of solar PV systems, biogas plants and cooking stoves across Bangladesh covering over 205,000 homes. The goal is to create at least 100,000 direct jobs by 2015, mainly for women.⁵

5. Skills shortages have to be addressed to ensure a sustainable and equitable transition to a low carbon economy.

While the net impact on employment will be positive, jobs could be lost as demand for products from the conventional energy sector is likely to decline¹³. Projections by the Global Climate Network indicate that, in 2020, macro-economic restructuring of the Chinese Economy will lead to between 11.5 and 17 million fewer jobs in traditional sectors. However, the net effect of investment in renewable and clean energy (6.5 to 7 million jobs) and macroshift towards services sectors (up to 20 million jobs created) is likely to bring about a net gain in jobs overall¹⁴. Transition measures will be required to assist the unemployed. Labour-market policies that anticipate the effects that climate change will have on the labour market, and help to prepare policies that support and mitigate change, for example through the promotion of social security and skills (re)training in declining sectors, have been crucial in the transition to a low carbon economy. The United Nations Environment Programme (UNEP) and ILO Green Jobs Initiative includes a number of activities ranging from awareness raising and country programmes to increasing institutional capacity and global analysis.



6. More stringent national legislation on environment, transport, construction and energy, in addition to international climate policy and finance mechanisms have incentivised low carbon transition.

A mix of innovative economic instruments (e.g. tax incentives, R&D credits), standards/codes (e.g. carbon emission standards for vehicles, strengthening building codes to improve energy and resource efficiency of the construction sector), and eco-labelling 'green' for energy consuming appliances and farm produce have created **market signals** for investors and plant managers to adopt greener technologies/practices.

Global carbon markets, Kyoto instruments, green fiscal stimulus packages¹⁵ and international climate finance all support jobs related to the transfer and deployment of low carbon technologies and measures to increase forest carbon storage in developing countries.

- 7. Better research and analyses are required to estimate green jobs in developing countries to ensure appropriate policies and measures are in place.** Quantifying green jobs, especially net impacts, is not straightforward. Most of the studies on green jobs in developing countries have relied on desk research and case studies due to lack of official sources and reliable systems of environment-economic accounts. The process of carrying out research in developing countries can help engage and educate stakeholders about the green jobs agenda. The decent-work issue is a particular challenge, but not unique to green jobs. Indicators to check if they are decent are difficult to find due to the informal nature of these jobs. The recently published UNEP report¹⁶ 'Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication' is a step in the right direction to address some of these research gaps.

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Definitions

Low carbon climate resilient development combines key elements of mitigation, adaptation and development strategies. A 'triple win' is where low carbon development brings benefits in mitigation, adaptation and poverty reduction/economic development. A 'double win' is where benefits are seen in only two of these areas.

Climate resilience is used in this document to mean: The capacity of households and communities to manage change and maintain or transform their living standards in the face of climate induced stresses and shocks without compromising long term prospects.

USD is the US dollar

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