



## Green jobs

### Key points

- **Green jobs lead to a net gain in the number of employment opportunities, especially in developing countries.**
- **Ensuring that the demand for quantity and quality of green employees can be met is a pressing policy task.**
- **Governments have to ensure that the green industry sector matures fast and well enough to take over the role as facilitator of and investor in green jobs.**

### Green jobs explained

A green job<sup>1</sup> is defined as a “position in agriculture, manufacturing, R&D, administrative and service activities aimed at alleviating the myriad environmental threats faced by humanity. Specifically, but not exclusively, this includes jobs that help to protect and restore ecosystems and biodiversity, reduce energy consumption, decarbonize the economy, and minimize or altogether avoid the generation of all forms of waste and pollution.”<sup>2</sup> A successful strategy to green the economy and create green jobs involves environmental and social full-cost pricing of energy and material inputs to discourage unsustainable patterns of production and consumption. The United Nations Environment Programme (UNEP) adds that a “green economy is an economy that values both nature and people and creates decent and adequately paid jobs.”<sup>3</sup>

### How it works

Governments should have a strong hand in creating a qualified workforce for green industries. UNEP and the International Labour Organization describe four ways in which employment will be affected as an economy moves towards a greener and more sustainable path:<sup>4</sup>

- 1) Additional jobs will be created, such as in the manufacturing of pollution-control devices, maintenance of renewable energy installations or management of green businesses.
- 2) Some existing employment in support of conventional growth patterns will be substituted by new “green” job possibilities, such as during the process of shifting from fossil fuels to renewable energy (figure 1), from truck manufacturing to rail car manufacturing or from land filling and waste incineration to recycling.
- 3) Certain jobs may be eliminated without direct replacement, such as when packaging materials are discouraged or banned and their production is discontinued.
- 4) Many existing professions (such as plumbers, electricians, metal workers and construction workers) will simply be transformed and redefined when day-to-day skill sets, work methods and their profiles transition to green jobs.

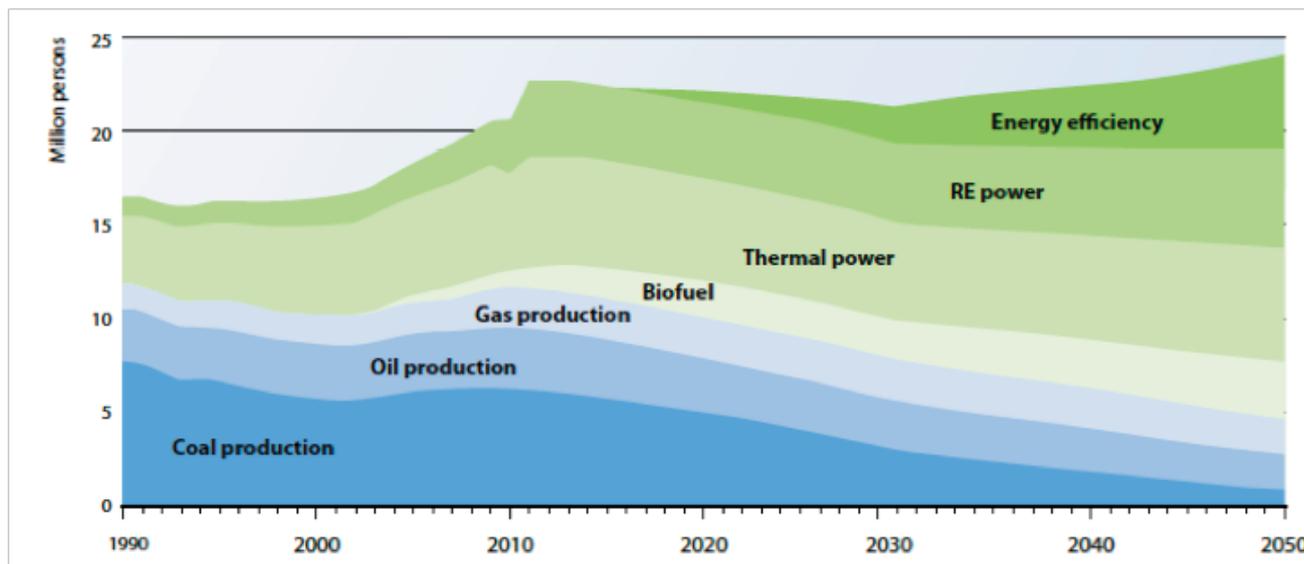
<sup>1</sup> The concept of “green job” derives from Green Jobs Initiative which was started jointly by United Nations Environment Programme, International Labour Organization and International Trade Union Confederation in 2007.

<sup>2</sup> United Nations Environment Programme, International Labour Organization, International Organization of Employers and International Trade Union Confederation, *Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World* (Nairobi, 2008). Available from [www.unep.org/labour\\_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf](http://www.unep.org/labour_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf) (accessed 29 January 2012).

<sup>3</sup> *ibid.*

<sup>4</sup> *ibid.*

Figure 1: Estimated total employment in the energy sector and its disaggregation

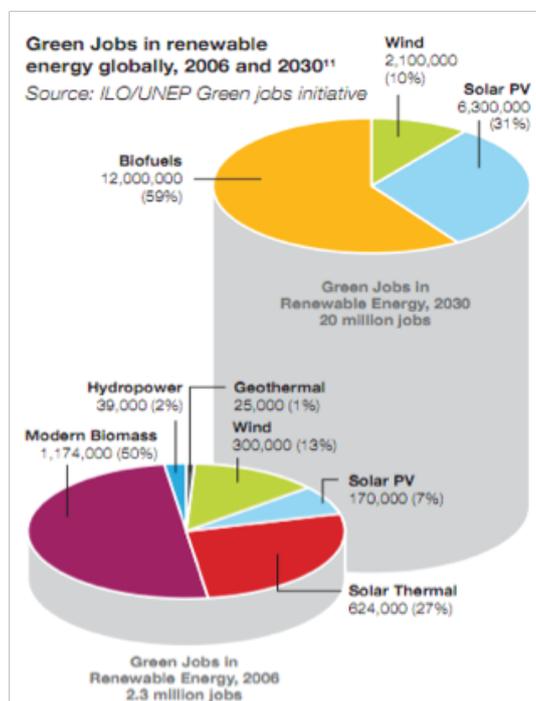


Source: United Nations Environment Programme, *Renewable Energy: Investing in Energy and Resource Efficiency* (Nairobi, 2011). Available from [www.unep.org/greeneconomy/Portals/88/documents/ger/GER\\_6\\_RenewableEnergy.pdf](http://www.unep.org/greeneconomy/Portals/88/documents/ger/GER_6_RenewableEnergy.pdf) (accessed 26 February 2012).

**The utility sector provides the largest number of green jobs**

The majority of green jobs will be created in utility sectors, principally in renewable energy (figure 2). Water and waste management (including recycling), construction and tourism will also gain significance as green employment sectors.<sup>5</sup>

Figure 2: Green jobs in renewable energy globally, 2006 and 2030



Source: AEA Technology and United Kingdom Department of International Development, *Green Jobs in a Low Carbon Economy* (London, 2011). Available from [www.aeat.com/cms/assets/Uploads/DFID-Low-carbon-summary-sheets/DFID\\_low\\_carbon\\_development\\_green\\_jobs.pdf](http://www.aeat.com/cms/assets/Uploads/DFID-Low-carbon-summary-sheets/DFID_low_carbon_development_green_jobs.pdf) (accessed 15 February 2012).

<sup>5</sup> International Labour Organization, *Promoting Decent Work in a Green Economy*, ILO Background Note to Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication (Geneva, 2011). Available from [www.ilo.org/wcmsp5/groups/public/@ed\\_emp/@emp\\_ent/documents/publication/wcms\\_152065.pdf](http://www.ilo.org/wcmsp5/groups/public/@ed_emp/@emp_ent/documents/publication/wcms_152065.pdf) (accessed 29 January 2012).

Several governments have acknowledged the potential job generation through green growth by inserting green components into the stimulus packages responding to the global economic crisis in 2008. The sectors that were typically included as green components were: construction and retrofitting of buildings; transport, especially mass transit and fuel-efficient cars; renewable energies, such as solar, wind and biomass; and environmental protection, such as waste management.

Table 1 below highlights green job industries, their progress to date and their estimated long-term job generation potential.

**Table 1: Green job progress to date and future potential**

Industry sector	Industry subsector	Green job progress to date	Long-term green job potential
<b>Energy</b>	Renewables	Good	Excellent
	Carbon capture and storage	None	Unknown
<b>Industry</b>	Steel	Fair	Fair
	Aluminium	Fair	Fair
	Cement	Fair	Fair
	Pulp and paper	Fair	Good
	Recycling	Good	Excellent
<b>Transportation</b>	Fuel-efficient cars	Limited	Good
	Mass transit	Limited	Excellent
	Rail	Negative	Excellent
	Aviation	Limited	Limited
<b>Buildings</b>	Green buildings	Limited	Excellent
	Retrofitting	Limited	Excellent
	Lighting	Good	Excellent
	Efficient equipment and appliances	Fair	Excellent
<b>Agriculture</b>	Small-scale sustainable farming	Negative	Excellent
	Organic farming	Limited	Good to excellent
	Environmental services	Limited	Unknown
<b>Forestry</b>	Reforestation/afforestation	Limited	Good
	Agroforestry	Limited	Good to excellent
	Sustainable forest management	Good	Excellent

Source: United Nations Environment Programme, International Labour Organization, International Organization of Employers and International Trade Union Confederation, *Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World* (Nairobi, 2008). Available from [www.unep.org/labour\\_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf](http://www.unep.org/labour_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf) (accessed 29 January 2012).

### Green jobs in the transport sector

Another segment that will offer an increasing number of green jobs in the future is transportation. Although the number and share of green jobs is currently quite low in most regions, the situation is likely to change significantly in some developing countries in the next few years due to the introduction of new regulations to produce more efficient and less-polluting cars. Thailand, for example, has launched a promising initiative to produce more fuel-efficient cars and seems to be on track to successfully green a good portion of its vehicle manufacturing workforce, counting 182,000 employees so far.<sup>6</sup>

**Table 2: Green job estimates in vehicle manufacturing**

	European Union	Japan	Republic of Korea	United States
Passenger car manufacturing workforce	2,000,000	952,000	247,000	1,095,000
Jobs in manufacturing green vehicles	150,000	62,000	10,000	13,000

Source: United Nations Environment Programme, International Labour Organization, International Organization of Employers and International Trade Union Confederation, *Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World* (Nairobi, 2008). Available from [www.unep.org/labour\\_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf](http://www.unep.org/labour_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf) (accessed 29 January 2012).

An infrastructure alternative to the car industry that is more environment friendly and labour intensive is railway transportation. However, over the past few decades, many countries have experienced a constant decline in rail transport, both in operating rail lines and in expanding infrastructure, leading to a decrease in the attached workforce. Even in China, where the rail network grew by 24 per cent from 1992 to 2002, railway employment was cut from 3.4 million to 1.8 million jobs.<sup>7</sup> India's railway jobs declined from 1.7 million to 1.5 million<sup>8</sup> due to the closing down of local lines and the introduction of efficient automated operating schemes. A sustainable transport policy is needed to reverse this trend. A strategic policy that channels investment towards building and rebuilding railway networks and integrating high-speed inter-city lines with regional and local lines would lead to a substantial expansion of green jobs.

### Green jobs in the building sector

Buildings use between 30 and 40 per cent of all primary energy resources and are responsible for about the same share of overall global greenhouse gas emissions and waste generation.<sup>9</sup> Energy-efficiency improvements throughout the life cycle of buildings, spanning from the design and construction of new buildings to the retrofitting and renovation of old buildings, provide major opportunities for employment.

The McKinsey Global Institute notes that the most cost-effective measures to reduce greenhouse gas emissions lie in the improvement of energy efficiency of buildings, including building insulation, lighting systems, air conditioning and water heating.<sup>10</sup> A vast number of jobs are likely to be created directly for the construction and retrofitting of green buildings and most of the construction jobs will be situated in developing countries. Achieving energy efficiency in the building sector requires enormous private and public investment. However, it can be done by using existing technology with little or no net cost, which means that the investments will primarily flow towards labour. This, in turn, connotes that greening buildings will create millions of jobs on a global scale.

<sup>6</sup> United Nations Environment Programme, International Labour Organization, International Organization of Employers and International Trade Union Confederation, *Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World* (Nairobi, 2008). Available from [www.unep.org/labour\\_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf](http://www.unep.org/labour_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf) (accessed 29 January 2012).

<sup>7</sup> *ibid.*

<sup>8</sup> *ibid.*

<sup>9</sup> *ibid.*

<sup>10</sup> John Creyts, Anton Derkach, Scott Nyquist, Ken Ostrowski and Jack Stephenson, *Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?*, U.S. Greenhouse Gas Abatement Mapping Initiative Executive Report (New York, McKinsey & Company, 2007). Available from [www.c2es.org/docUploads/US\\_ghg\\_final\\_report.pdf](http://www.c2es.org/docUploads/US_ghg_final_report.pdf) (accessed 29 January 2012).

## Strengths of green jobs<sup>11</sup>

- **Enhancing economic development in the long run:** The green job sectors have a greater multiplier effect on the economy than conventional employment segments because they feature the establishment of longer, more diversified supply chains, higher labour intensity and net-profit margins.
- **Triggering rural development and supporting poverty reduction:** Green jobs offer opportunities for employment in rural areas, especially in least developed countries. They often exploit local resources and try to build up or establish local training and manufacturing structures that are not dependent on dense urban supply chains and infrastructure. The installation and maintenance of small-scale renewable energy facilities, such as solar panels or wind energy generators for off-grid households in rural areas, is a good example. By providing employment opportunities, green jobs help to lift low-income workers, including an over-proportional share of women, out of poverty.
- **Providing more opportunities for education:** Many green sectors are just emerging and as a consequence, the workforce that supports them has to be created. This provides education and training opportunities for people with no or little formal education to date, even in remote areas, because employers will look for readily available workers within a small proximity to support their newly established green industry.
- **Reducing greenhouse gas emissions:** Due to the fact that most of the green jobs will be created in the renewable energy and energy-efficiency segments, their establishment will help governments to achieve their carbon emissions targets.
- **Improving environmental conditions:** Greening the job profiles in all sectors of the economy will help to disseminate the knowledge and application of sustainable practices and thereby lessen the adverse environmental impacts of these sectors while maintaining or even enhancing their economic output. In this way, green jobs in forestry and agriculture, for example, will not only contribute to environmental integrity but also strengthen food security.
- **Supporting long-term employment:** Green jobs are supporting a forward-looking industry that aims to sustain economic growth within ecological boundaries. Hence, they too are established with a long-term perspective and offer lasting, secure employment opportunities in a transitioning economy.

## Challenges for green jobs

- **Transformation of conventional business mindsets:** In a period when crisis and unstable economic conditions are overshadowing the actions of big and small businesses alike, there seems to be no space left for taking a seemingly risky and unexplored green business approach into consideration. This is aggravated by the fact that green industries are often more labour-intensive than their conventional counterparts and go against the modern trend of expanding businesses but keeping the number of employees and real wages constant.<sup>12</sup>
- **Lack of appropriate education infrastructure:** There is a well-established, widespread and diversified education system in place for almost all conventional industries and jobs. However, the emerging demand for green employees might be confronted with a lack of adequately skilled workers in some regions and sectors, because there is no systematic education infrastructure in place for them yet.

<sup>11</sup> AEA Technology and United Kingdom Department of International Development, *Green Jobs in a Low Carbon Economy* (London, 2011). Available from [www.aeat.com/cms/assets/Uploads/DFID-Low-carbon-summary-sheets/DFID\\_low\\_carbon\\_development\\_green\\_jobs.pdf](http://www.aeat.com/cms/assets/Uploads/DFID-Low-carbon-summary-sheets/DFID_low_carbon_development_green_jobs.pdf) (accessed 15 February 2012).

<sup>12</sup> International Labour Organization, *Global Employment Trends 2011: The Challenge of a Jobs Recovery* (Geneva, 2011). Available from [www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/@publ/documents/publication/wcms\\_150440.pdf](http://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/@publ/documents/publication/wcms_150440.pdf) (accessed 24 February 2012).

- **Limited labour demand and mobility:** The demand for and expansion of green jobs is relatively new, and although the range of employment opportunities in the green field is wide, the market for it is not yet fully developed. For the moment, green industry and businesses remain mostly small-sized and dispersed;<sup>13</sup> they are ideally based on local resources and regional supply chains. As a consequence, they do not adopt the same employment dimension as conventional business branches. Additionally, green job profiles are comparatively new and indistinct, which hampers the transfer and acknowledgement of green job qualifications across different geographic areas and businesses,<sup>14</sup> which restricts labour mobility of the green workforce.
- **Green industry sector hurdles:**<sup>15</sup> The obstacles to the development of the green industry as a whole also prevent the expansion of green jobs. These hurdles include lack of supporting regulations (policy hurdle), ministry authority overlap (institutional hurdle), infrastructure lock-in (technical hurdle), site-specific, dispersed nature of green industry hampering benefits from economies of scale (market hurdle), high initial capital costs for many green technology projects (economic hurdle) and lack of knowledge about new green technologies, alternative resources, equipment suppliers and potential financiers (information hurdle).

## Implementing strategies

**Institute policies to attract the business sector:** Recent fiscal stimulus packages, like the Green New Deal, aim to create short-term impacts on employment<sup>16</sup> and accelerate the transition towards green growth (table 3). However, to achieve long-term job creation and to fulfil the projected potential for the number of green jobs (table 4), governments need private sector engagement. For this, they can issue fiscal stimuli (subsidies, direct payments or tax reductions), regulations (technology standards) or public financing mechanisms (green funds or loans with preferential interest rates).

<sup>13</sup> Asia Business Council, *Addressing Asia's New Green Jobs Challenge* (Hong Kong, 2009). Available from [www.asiabusinesscouncil.org/docs/GreenJobs.pdf](http://www.asiabusinesscouncil.org/docs/GreenJobs.pdf) (accessed 23 February 2012).

<sup>14</sup> Australia, *Draft of the Energy White Paper: Strengthening the Foundations for Australia's Energy Future* (Canberra, Department of Resources, Energy and Tourism, 2011). Available from [www.ret.gov.au/energy/Documents/ewp/draft-ewp-2011/Draft-EWP-chap8.pdf](http://www.ret.gov.au/energy/Documents/ewp/draft-ewp-2011/Draft-EWP-chap8.pdf) (accessed 23 February 2012).

<sup>15</sup> Waste Concern Consultants, *Assessment of Green Jobs* (Bangladesh, 2010). Available from [www.wasteconcern.org/Publication/RE\\_Summary.pdf](http://www.wasteconcern.org/Publication/RE_Summary.pdf) (accessed 17 February 2012).

<sup>16</sup> According to recent studies in the United States, federal and state efforts to stimulate creation of green jobs have largely failed due to overestimation of the green market (energy efficiency, installation of renewable etc.). For more information, see Aaron Glantz, "Number of Green Jobs Fails to Live Up to Promises", *New York Times*, August 18, 2011. Available from [www.nytimes.com/2011/08/19/us/19bcgreen.html](http://www.nytimes.com/2011/08/19/us/19bcgreen.html) (accessed 19 February 2012).

**Table 3: Estimate of the number of jobs in low-carbon sectors between 2008 and 2010**

Source	Actual No. of jobs	Region examined	Time-frame	Sector/Other considerations
UNEP, ILO, IOE, ITUC (2008) Green Jobs: Towards decent work in a sustainable, low-carbon world	2,300,000	Worldwide	2008	Renewable energy sector (directly and indirectly through supplier industries)
Clean Edge, Clean Tech Job Trends 2010	300,000	Worldwide	2010	Solar
	500,000	Worldwide	2010	Wind
WWEA	550,000	Worldwide	2009	Wind Energy
Ren21	3,000,000	Worldwide	2009	Renewable energy sector
UNEP	1,500,000	China	End of 2009	Renewable energy sector
	300,000	China	Incremental in 2009	Renewable energy sector
	600,000	China	End of 2009	Solar thermal industry
	266,000	China	End of 2009	Biomass Energy
	55,000	China	End of 2009	Solar PV (installation & manufacturing)
	22,000	China	End of 2009	Wind power
Ren21	250,000	China	2009	Solar Hot Water
Ren21	700,000	Brazil	2009	Bio-ethanol
European Wind Energy Association	192,000	EU	2009	Wind
German Government Study	259,000	Germany	2006	Renewable energy sector direct and indirect jobs
Solar Foundation	100,000	US	End of 2010	Solar power
	50,000	US	End of 2009	Solar power
World Economic Forum	40,000	US	At June 2010	Bio-refinery industry
Renewable UK	9,200	UK	2010	Large-scale onshore and offshore wind

Source: Deutsche Bank Group, *Investing in Climate Change 2011* (Frankfurt, 2011). Available from [www.igcc.org.au/Resources/Documents/ExploringRiskAndReturn.pdf](http://www.igcc.org.au/Resources/Documents/ExploringRiskAndReturn.pdf) (accessed 21 February 2012).

**Table 4: Long-term green job potential**

Source	Potential No. of jobs	Region examined	Time-frame	Sector/Other considerations
WWEA	1,000,000	Worldwide	2012	Wind Energy
UNEP, ILO, IOE, ITUC (2008) Green Jobs: Towards decent work in a sustainable, low-carbon world	12,000,000	Worldwide	2030	Biofuels-related agriculture & industry
	2,100,000	Worldwide	2030	Wind Energy
	6,300,000	Worldwide	2030	Solar PVs
World Economic Forum	800,000	US	2022	Commercialization of second and third generation biofuels
European Wind Energy Association	250,000	EU	2020	Wind
	88,000	EU	2015	Wind
	450,000	EU	2020	Wind - Cumulative
	23,000-60,000	UK	2020	Offshore wind
Anaerobic Digestion and Biogas Association	40,000	UK	2020	Biomass
Carbon Trust (2008)	40,000-70,000	UK	2020	Jobs created along the supply chain if 29 GW of offshore wind capacity is installed.

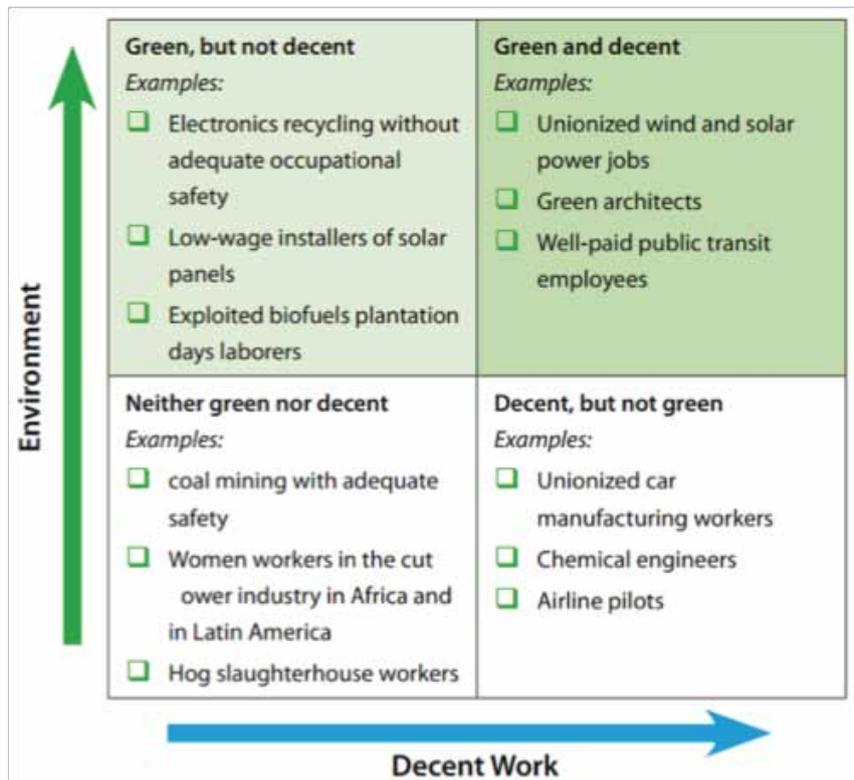
Source: Deutsche Bank Group, *Investing in Climate Change 2011* (Frankfurt am Main, 2011). Available from [www.igcc.org.au/Resources/Documents/ExploringRiskAndReturn.pdf](http://www.igcc.org.au/Resources/Documents/ExploringRiskAndReturn.pdf) (accessed 21 February 2012).

**Reallocate labour across sectors and provide job training:** The OECD estimates that employment in renewable energy sectors will grow at the expense of employment in fossil fuels and coal mining industries.<sup>17</sup> Additionally, this reallocation of labour across sectors and enterprises and the incorporation and dissemination of new job characteristics and skill requirements are essential for the transition to a low-carbon economy. Governments need to support job training for acquiring new skills by setting up education and certification schemes, guidelines and facilities.

<sup>17</sup> Organization for Economic Co-operation and Development, *Interim Report of the Green Growth Strategy: Implementing Our Commitment for a Sustainable Future*, Meeting of the OECD Council at Ministerial level (Paris, 2010). Available from [www.oecd.org/dataoecd/42/46/45312720.pdf](http://www.oecd.org/dataoecd/42/46/45312720.pdf) (accessed 29 January 2012).

**Ensure green jobs are decent jobs:** Green jobs should be decent jobs with adequate wages and close attention to safe working conditions, job security and workers' rights (for green and decent job examples, see figure 3). Likewise, the greening of the economy should contribute to poverty reduction. The transition to a green and low-carbon economy will also mean building the necessary capacities for both the public and private sectors. Governments can help by setting the agenda, mobilizing resources and developing adequate capacity-building programmes. In any case, they should ensure the decency and quality of green jobs by setting specific guidelines and ensuring that worker rights are protected.

**Figure 3: Green and decent job scheme**



Source: United Nations Environment Programme, International Labour Organization, International Organization of Employers and International Trade Union Confederation, *Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World* (Nairobi, 2008). Available from [www.unep.org/labour\\_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf](http://www.unep.org/labour_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf) (accessed 29 January 2012).

### Country experience: Green jobs in Asia

**China:** The renewable energy sector creates output worth US\$17 billion and employs 1.5 million people, of which 600,000 are employed in making and installing solar thermal products, such as solar water heaters.<sup>18</sup> Recycling and waste management employs an estimated 10 million people.<sup>19</sup> The waste management sector is expected to grow rapidly due to the increasing urban population and industrialization.

Global Climate Network projections indicate that in 2020, the macro-economic restructuring of the Chinese economy will lead to 11.5 to 17 million fewer jobs in traditional sectors. However, the net effect of investment in renewable and clean energy, which will create approximately 6.5 to 7 million jobs, and the macro shift towards the services sector, which is likely to generate up to 20 million jobs, will bring about a net gain in jobs overall.<sup>20</sup>

**India:** According to India's Institute of Green Economy, an annual expenditure of US\$1 million spent on sustainably managed forestry has the potential to create between 500 and 1,000 full-time jobs. India could also generate 900,000 jobs by 2025 in biomass gasification.<sup>21</sup> With 9 million households still depending on traditional cooking stoves, replacing them with recently developed biomass cooking technologies is projected to create 150,000 jobs.<sup>22</sup>

**Sri Lanka:** Since 2009, the Ministry of Environment has distributed Green Job Awards to individuals, teams and organizations in relation to their contribution in initiating, promoting and carrying out environment-friendly technologies or activities in the following areas: biodiversity and ecosystem conservation, agriculture and livestock, climate change and disaster management, transport, power and energy, industrial and enterprise development, waste management and pollution control, water resource management, soil conservation and land improvement, urban development and spatial planning and environmental education and campaigns.<sup>23</sup>

### Further reading

*Green Jobs and the Clean Energy Economy*, by D. Engel and M. D. Kammen (Copenhagen, Copenhagen Climate Council, 2009). Available from [http://rael.berkeley.edu/sites/default/files/old-site-files/TLS%20Four\\_May2209\\_1.pdf](http://rael.berkeley.edu/sites/default/files/old-site-files/TLS%20Four_May2209_1.pdf)

*Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World* (Nairobi, United Nations Environment Programme, International Labour Organization, International Organization of Employers and International Trade Union Confederation, 2008). Available from [www.unep.org/labour\\_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf](http://www.unep.org/labour_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf)

*Promoting Decent Work in a Green Economy* (Geneva, International Labour Organization, 2011). Available from [www.ilo.org/wcmsp5/groups/public/@ed\\_emp/@emp\\_ent/documents/publication/wcms\\_152065.pdf](http://www.ilo.org/wcmsp5/groups/public/@ed_emp/@emp_ent/documents/publication/wcms_152065.pdf)

<sup>18</sup> Deutsche Bank Group, *Investing in Climate Change 2011* (Frankfurt, 2011). Available from [www.igcc.org.au/Resources/Documents/ExploringRiskAndReturn.pdf](http://www.igcc.org.au/Resources/Documents/ExploringRiskAndReturn.pdf) (accessed 21 February 2012).

<sup>19</sup> United Nations Environment Programme, International Labour Organization, International Organization of Employers and International Trade Union Confederation, *Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World* (Nairobi, 2008). Available from [www.unep.org/labour\\_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf](http://www.unep.org/labour_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf) (accessed 29 January 2012).

<sup>20</sup> Global Climate Network, *Low Carbon Jobs in an Interconnected World: Literature Review*, Global Climate Network Discussion Paper 3 (London, 2010). Available from [www.globalclimatenetwork.info/uploadedFiles/globalclimatenetwork/low\\_carbon\\_jobs\\_lit\\_review.pdf](http://www.globalclimatenetwork.info/uploadedFiles/globalclimatenetwork/low_carbon_jobs_lit_review.pdf) (accessed 29 January 2012).

<sup>21</sup> United Nations Environment Programme, *Global Green New Deal: Policy Brief* (Geneva, 2009). Available from [www.unep.org/pdf/A\\_Global\\_Green\\_New\\_Deal\\_Policy\\_Brief.pdf](http://www.unep.org/pdf/A_Global_Green_New_Deal_Policy_Brief.pdf) (accessed 14 February 2012).

<sup>22</sup> United Nations Environment Programme, International Labour Organization, International Organization of Employers and International Trade Union Confederation, *Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World* (Nairobi, 2008). Available from [www.unep.org/labour\\_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf](http://www.unep.org/labour_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf) (accessed 29 January 2012).

<sup>23</sup> R.H.S. Samarasinghe, "Green Job Awards: 2011", presented at the World Environment Day, 5 June, 2011. Available from [www.environmentmin.gov.lk/temporary\\_files/add\\_copy\\_eng\\_final.pdf](http://www.environmentmin.gov.lk/temporary_files/add_copy_eng_final.pdf) (accessed 29 January 2012).