

Green Jobs:

Towards decent work in a sustainable, low-carbon world

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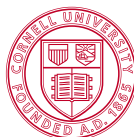


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Explanatory Notes

This report is written in American English. All units are metric unless otherwise indicated.

Currency values are reported in U.S. Dollars throughout the report. Original currency values other than Dollars are reported in parentheses and are translated into U.S. Dollars using the following 2007 average exchange rates: 1 € (Euro) = \$1.37; 1 £ (British Pound) = \$2.00 (Federal Reserve Bank of New York ("Foreign Exchange Rates Historical Search," at www.ny.frb.org/markets/fxrates/historical/home.cfm).

Foreword by UNEP, ILO, IOE, ITUC

Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World is the first comprehensive report on the emergence of a “green economy” and its impact on the world of work in the 21st Century.

Until now, there has been much anecdotal evidence indicating that the pattern of employment is indeed changing—and that new jobs are beginning to emerge in favor of greener, cleaner and more sustainable occupations. This report shows for the first time at global level that green jobs are being generated in some sectors and economies.

This is in large part as a result of climate change and the need to meet emission reduction targets under the UN climate convention. This has led to changing patterns of investment flows—flows into areas from renewable energy generation up to energy efficiency projects at the household and industrial level.

The bulk of documented growth in Green Jobs has so far occurred mostly in developed countries, and some rapidly developing countries like Brazil and China. Green Jobs are also beginning to be seen in other developing economies. A project in Bangladesh, training local youth and women as certified solar technicians and as repair and maintenance specialists, aims to create some 100,000 jobs. In India, an initiative to replace inefficient biomass cooking stoves in nine million households with more advanced ones could create 150,000 jobs. It now appears that a green economy can generate more and better jobs everywhere and that these can be decent jobs.

Despite such optimism, it is clear that urgent action is needed. In some areas, especially in the developing world, new jobs being created in the food, agriculture and recycling sectors as a result of climate change and environment leave much to be desired and can hardly be considered as decent. Climate change is also having a negative impact on jobs in some areas. Sectors consuming large amounts of energy and natural resources are likely to see a decline in jobs. Climate change is already damaging the livelihoods of millions, mostly poor people in developing countries. Thus, just transitions to new opportunities and sustainable jobs and incomes are needed for those affected.

So what of the future? Clearly much depends on a deep and decisive response to climate change at the UN climate convention meeting in Copenhagen in late 2009. Equity is going to be a key condition for a new agreement, between countries as well as between social groups within countries. This report provides important pointers for how this can be achieved.

A climate deal is also likely to support payments to countries for managing forests for their carbon absorption potential opening up new opportunities for Green Jobs in the forestry sector of the Tropics.

An agreement by 2010 under the Convention on Biological Diversity on Access and Benefit Sharing of Genetic Resources could trigger similar North-South funding flows with job implications in conservation and natural resource management.

The future trajectory of the Green Jobs Initiative will therefore depend on a wide range of factors and actors. Governments, as well as the private sector will play a key role. Changes in the decisions, practices and behaviors of millions of managers, workers and consumers will be needed. This report attempts to contribute the necessary awareness about Green Jobs and a green economics to help make those changes happen.

The report also comes amidst a visible period of transition: trade unions, employers' organizations, the private sector and the UN are natural allies in this quest. Each has a critical role to play, not least in the areas of boosting efficiency in the use of energy and raw materials through better work organization and of retraining and retooling the global workforce to seize the new opportunities and to master the transition to green production and consumption.

Certainly there will be winners and losers, so support for workers and enterprise adaptation will be key. But if the international community can get it right there is the real prospect of generating and fostering Green Jobs and Decent Work for ever more people. Green Jobs and Decent Work are a new and powerful force for achieving a more resource efficient and equitable global economy that mirrors all our aspirations for true sustainable development.

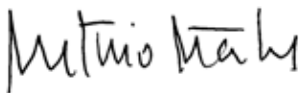
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List of Acronyms

ABVAKABO	Civil servant union (Netherlands)
ACEA	Association des Constructeurs Européens d'Automobiles (European Automobile Manufacturers Association)
ACEEE	American Council for an Energy-Efficient Economy
ADB	Asian Development Bank
ADM	Archer Daniels Midland
ALMP	Active Labour Market Policies
APP	Asia Pacific Partnership
ASES	American Solar Energy Society
AWEA	American Wind Energy Association
BASF	Largest chemical company in the world (German)
BAU	Business as usual
BEA	Berlin Energy Agency
BEE	Bundesverband Erneuerbare Energien (Federal Association for Renewable Energy, Germany)
BIR	Bureau of International Recycling
BMRA	British Metals Recycling Association
BMU	Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (Federal Ministry for Environment, Nature Protection and Reactor Safety, Germany)
BOI	Board of Investment (Thailand)
BREEAM	Building Research Establishment Environmental Assessment Method (UK Green Building Standard)
BRT	Bus Rapid Transit
BTU	British Thermal Unit (heat value of fuels; 1 BTU is equivalent to about 1,054–1,060 joules)
BWI	Building and Woodworkers International Union
C&DW	Construction and demolition wastes
CAFE	Corporate Average Fuel Economy (U.S. fuel-efficiency standard)
CALPIRG	California Public Interest Research Group
CASBEE	Comprehensive Assessment System for Building Environmental Efficiency (Japan Green Building Standard)
CBI	Confederation of British Industry
CCI	Clinton Climate Initiative
CCOO	Confederación Sindical de Comisiones Obreras (Trade Union Federation, Spain)
CCS	Carbon capture and sequestration/storage
CDM	Clean Development Mechanism (Kyoto Protocol)
CEMPRE	Entrepreneurial Commitment for Recycling (Brazil)
CFLs	Compact fluorescent lamps
CGIAR	Consultative Group on International Agricultural Research
CGT	Confédération Générale du Travail (General Confederation of Labor, France)
CIS	Commonwealth of Independent States (an alliance consisting of eleven former Soviet Republics: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Ukraine, and Uzbekistan).
CNG	Compressed natural gas
CNMIA	China Nonferrous Metals Industry Association

CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
COG	Coke oven gas
COSATU	Congress of South African Trade Unions
CREIA	Chinese Renewable Energy Industries Association
CSC	China Steel Corporation
DEFRA	Department of Environment, Food and Rural Affairs (United Kingdom)
DOE	Department of Energy (United States)
DRI	Direct reduced iron (steel-production process)
EAA	European Aluminium Association
EAF	Electric Arc Furnace (steel-production)
EBI	Environmental Business International
EC	European Commission
ECOTEC	British-based consulting firm
EE	Energy efficiency
EEN	Energy Efficiency Network
EFTE	European Federation for Transport and Environment
EJ	Exajoule (exa denotes 10 ¹⁸ , or 1,000,000,000,000,000,000)
EPA	Environmental Protection Agency (United States)
EPIA	European Photovoltaic Industry Association
EPR	Extended producer responsibility
EREC	European Renewable Energy Council
ERI	Energy Research Institute (China; part of the National Development and Reform Commission, see NDRC)
ESCOs	Energy Service Companies
ETUC	European Trade Union Confederation
EU	European Union
EU ETS	European Union Emission Trading Scheme
EU-15	European Union prior to eastward expansion, with 15 members
EU-25	European Union after expansion, with 25 members
EWEA	European Wind Energy Association
FAO	Food and Agricultural Organization of the United Nations
FNV	Federatie Nationale Vakbonden (trade union confederation, Netherlands)
FSC	Forest Stewardship Council
FTE	Full-time equivalent
GAO	Government Accountability Office (United States)
gCO ₂ /km	Grams of carbon dioxide per kilometer
GDP	Gross domestic product
GEF	Global Environment Facility
GFRA	Global Forest Resource Assessment
GHG	Greenhouse gas

List of Acronyms (continued)

GJ	Gigajoule (giga denotes 10 ⁹ , or 1,000,000,000)
GJ/t	Gigajoules per ton
GS	Grameen Shakti (microcredit bank, Bangladesh)
GW	Gigawatt
GWEC	Global Wind Energy Council
GWth	Gigawatts-thermal
HGV	Heavy Goods Vehicle
HVAC	Heating, ventilation and air conditioning
IATA	International Air Transport Association
ICCT	International Council on Clean Transportation
ICFPA	International Council of Forest and Paper Associations
IEA	International Energy Agency
IFAD	International Fund for Agricultural Development
IISI	International Iron and Steel Institute
ILC	International Labour Congress
ILO	International Labour Organization
ILUMEX	Illumination of Mexico
IOE	International Organization of Employers
IPCC	Intergovernmental Panel on Climate Change
IPRs	Intellectual property rights
ISRI	Institute of Scrap Recycling Industries (United States)
ISTAS	Instituto Sindical de Trabajo, Ambiente y Salud (Spain)
ITDP	Institute for Transportation and Development Policy
ITUC	International Trade Union Confederation
IUF	International Union of Food, Agricultural, Hotel, Restaurant, Catering, Tobacco and Allied Workers' Associations
JAA	Japan Aluminium Association
JAMA	Japan Auto Manufacturers Association
JI	Joint Implementation (Kyoto Protocol mechanism)
Joule (J)	The Joule replaces an older unit, the calorie (one calorie equals 4.2 joules)
JPA	Japan Paper Association
KAMA	Korea Automobile Manufacturers Association
KCYP	Kibera Community Youth Program (Nairobi, Kenya)
kgce	Kilograms of coal equivalent
km/l	Kilometers per liter (vehicle fuel consumption measure)
kW	Kilowatt
kWh	Kilowatt-hour
l/100 km	Liters per 100 kilometers (vehicle fuel-consumption measure)
LBL	Lawrence Berkeley National Laboratory (United States)
LED	Light-emitting diode

LEED	Leadership in Energy and Environmental Design (building efficiency standard, United States)
LFGTE	Landfill gas-to-energy
light trucks	U.S. vehicle category (encompassing passenger cars as well as heavier vehicles, such as SUVs, pick-up trucks, and minivans)
LLL	Reliable and responsive lifelong learning
LPG	Liquid petroleum gas
MDGs	Millennium Development Goals
MIT	Massachusetts Institute of Technology
mpg	Miles per gallon (vehicle fuel-consumption measure)
MSN	The Microsoft Network
Mt	Million tons
MTCC	Malaysian Timber Certification Council
MW	Megawatt
NAFTA	North American Free Trade Agreement
NAPEE	National Action Plan for Energy Efficiency (United States)
NDRC	National Development and Reform Commission (China)
NGO	Non-governmental organization
NOx	Nitrogen oxides
NTFP	Non-timber forest products
OCAW	Oil, Chemical and Atomic Workers
ODA	Official development assistance
OEA	European Aluminium Refiners and Remelters
OECD	Organization for Economic Co-operation and Development
OFARM	Organic Farmers' Agency for Relationship Marketing
PBB	Polybrominated biphenyls, also called brominated biphenyls or polybromobiphenyls
PBDE	Polybrominated diphenyl ethers
PCB	Polychlorinated biphenyl
PEFC	Programme for Endorsement of Forest Certification
PES	Payment for environmental services
PFCs	Perfluorocarbons
PTC	Production Tax Credit (United States)
PV	Photovoltaics
R&D	Research and development
RATP	Régie Autonome des Transports Parisiens de France (public transit agency, Paris, France)
RE	Renewable energy
RE&EE	Renewable Energy & Energy Efficiency
REDD	Reducing Emissions from Deforestation and Degradation
REN21	Renewable Energy Policy Network for the 21st Century
REPP	Renewable Energy Policy Project (United States)
RFP	Request for proposal
RITE	Research Institute of Innovative Technology on Earth (Japan)

List of Acronyms (continued)

RoHS	Restrictions on Hazardous Substances (EU directive)
ROI	Return on investment
RPS	Renewable Portfolio Standard
SAI	Sustainable Agriculture Initiative
SEBRAE	Small Business Support Services (Brazil)
SEIA	Solar Energy Industry Association (United States)
SEIU	Service Employees International Union (United States)
SFM	Sustainable Forest Management
SMFEs	Small and medium sized forest enterprises
SOx	Sulfur oxides
sqm	Square meter
STIB	Société Transport Intercommunaux de Bruxelles (public transit agency, Brussels, Belgium)
SUV	Sport utility vehicle
SWEEP	Southwest Energy Efficiency Project (United States)
TCO	Confederation of Professional Employees (trade union, Sweden)
TRIPs	Agreement on Trade-Related Aspects of Intellectual Property Rights
TRT	Top-pressure turbines
TUAC	Trade Union Advisory Committee to the OECD
TUC	Trades Union Congress (United Kingdom)
TWh	Terawatt-hours
UCS	Union of Concerned Scientists (non-governmental organization, United States)
UITP	International Association of Public Transport
ULCOS	Ultra-Low CO ₂ Steelmaking (European Union initiative)
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
USGS	U.S. Geological Survey
VAT	Value-added tax
VC	Venture capital
WBCSD	World Business Council for Sustainable Development
WEEE	Waste Electronic and Electrical Equipment Directive (European Union)
WRAP	Waste and Resources Action Programme (United Kingdom)
WRAP	Waste and Resources Action Programme (UK)
WTO	World Trade Organization
WWEA	World Wind Energy Association
ZEDP	Zabaleen Environmental Development Programme (Cairo, Egypt)

