



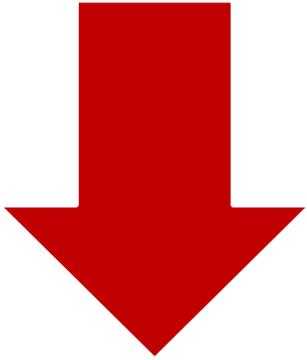
What is the purpose of measuring employment in a green economy?

Need to understand:

1. How will environmental degradation and resource scarcity affect the world of work?
2. What is the impact on jobs of environmental policies and shifts in investments – in terms of job creation or loss of jobs?
3. What transitional arrangements are needed in labour markets – including occupational changes, building and upgrading skills, social protection policies, and social dialogue?
4. What are the opportunities to advance decent work for all – and through which means of action?



A global assessment: Current models of growth will undermine productivity overtime



The resource-intensive development model of the past will lead to rising costs, loss of productivity and disruption of economic activity:

Productivity levels would lower by 2.4% in 2030 and 7.2% by 2050 in a BAU (ILO Global Economic Linkages model).

Whereas a greener economy and more sustainable enterprises could create tens of millions of green jobs: 15-60 million potential additional jobs globally over the next two decades.

- *At least half of the global workforce, the equivalent of 1.5 billion people, will be affected by the transition to a greener economy. 8 key sectors are expected to play a central role: agriculture, forestry, fishing, energy, resource-intensive manufacturing, recycling, building and transport (ILO, UNEP, IOE, ITUC, 2012).*



What are green jobs?

Green jobs are **decent jobs** in agriculture, manufacturing or services that:

- Reduce consumption of energy and raw materials
- Limit greenhouse gas emissions
- Minimize waste and pollution
- Protect and restore ecosystems

*(Source: Green Jobs: Towards decent work in a sustainable, low-carbon world
UNEP/ILO/IOE/ITUC, 2008)*

- Jobs are green by products/services or processes
- Green jobs include all jobs – shades of green





A range of possible assessment approaches and tools

- Inventories and surveys
 - Simple and effective way of assessing how many green jobs exist in specific sectors, regions or countries
- Input-output analysis and Social Accounting Matrix
 - Empirical tools that rely on the construction of a matrix or table listing all subsectors in an economy and detailing how outputs from one sector are used as inputs in others. Use of information on employment intensity to assess effects on jobs.
- Full economic models



Multipliers: Direct, indirect and induced employment

- Investment in “green” sectors will result in an expansion of production and the generation of a number of *direct jobs*.
- Expanded production invariably leads to a higher demand for inputs, resulting in an increase in *indirect jobs* in supplier industries.
- The increased consumer spending of those in these newly created direct and indirect jobs will also create a number of *induced jobs*.

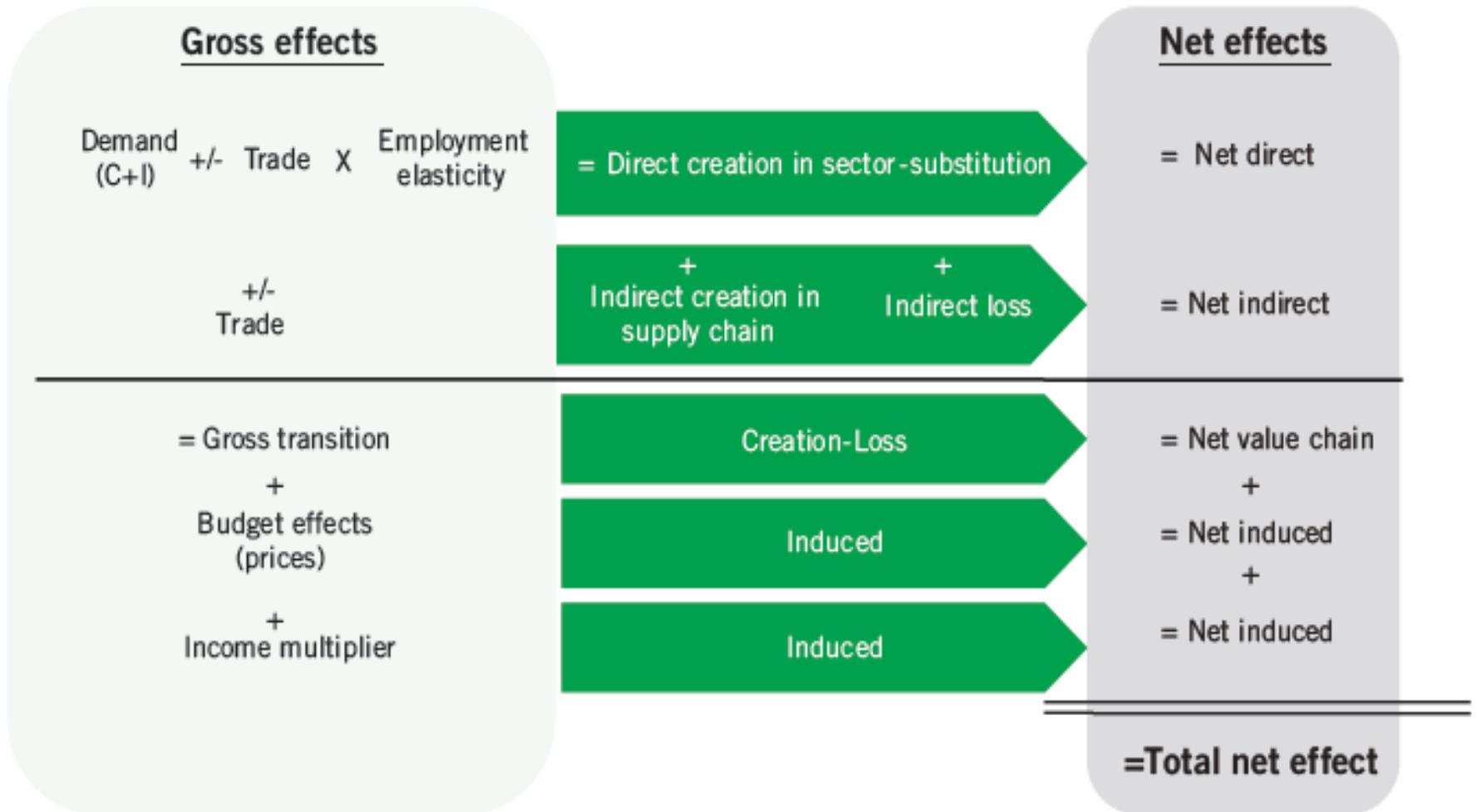


Gross versus Net employment effects

- Gross employment effects:
 - The direct, indirect and induced effects add up to a gross creation or loss in employment.
- The net effects are important because they show whether or not a greener economy will generate more jobs or result in job losses.
- Whether the overall, quantitative effect on employment is positive or negative depends on the complex interplay between these job flows and the policy mix.



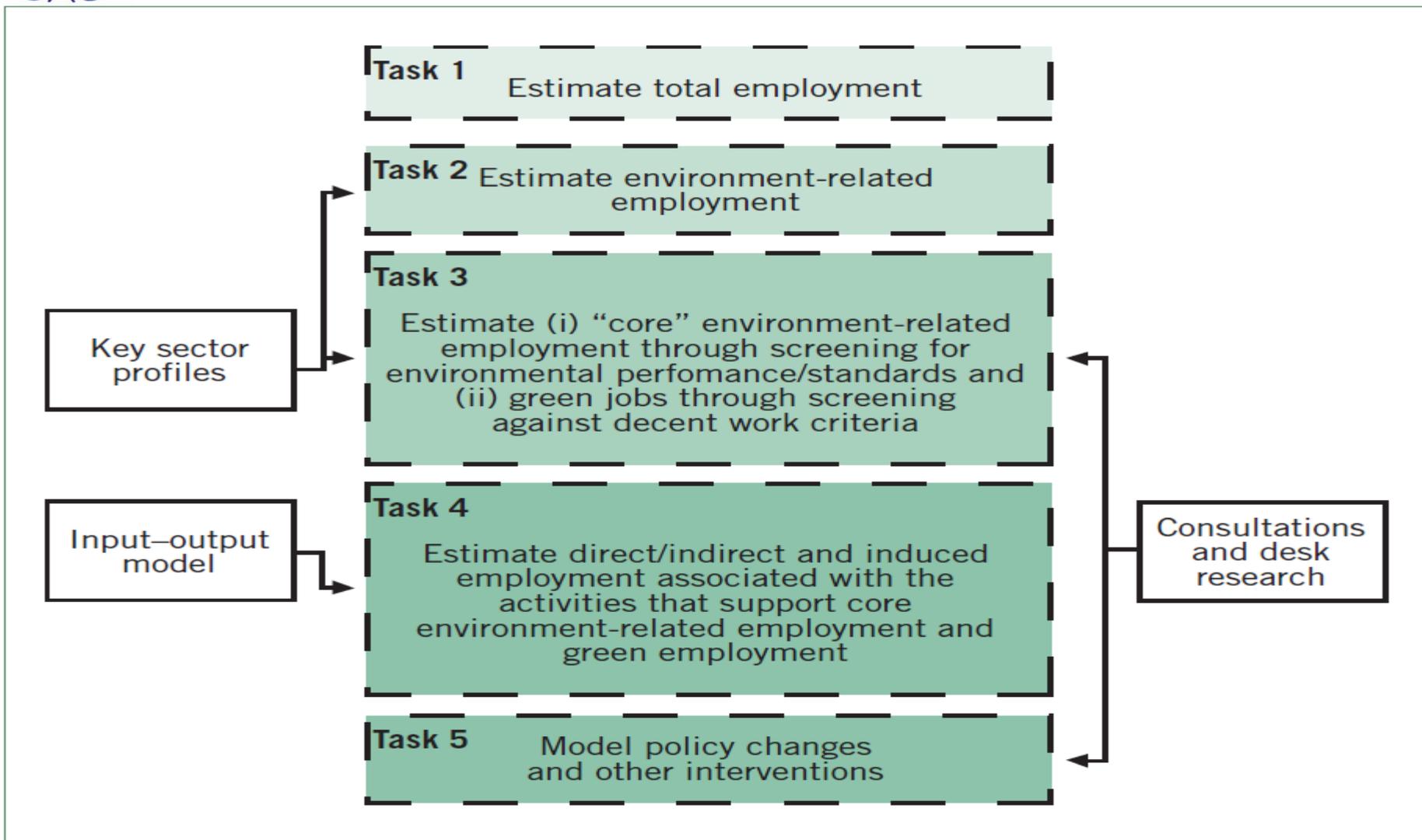
Overall effects on employment



Source: ILO, Working towards sustainable development, 2012



ILO practitioners' guide



Source: Jarvis, Andrew; Varma, Adarsh; Ram, Justin -

Assessing green jobs potential in developing countries: A practitioner's guide, ILO 2011



The case of Mauritius: Direct and indirect job multipliers

	Output multiplier	Direct jobs (Per million)	Indirect jobs	Total
Agriculture				
Conventional	1.21	2.28	0.29	2.57
Green	1.30	2.28	0.41	2.69
Manufacturing (Textile)				
conventional	1.58	0.7	0.8	1.5
Green	1.54	1.7	0.8	2,5
Services (Hotel)				
Conventional	1.37	0.67	0.55	1.23
Green	1.37	1.49	0.55	2.05
Energy				
Fossil fuel	1.6	0.2	0.6	0.8
Renewable	2.5	0.2	1.2	1.4



Examples of country assessments

Country	Model and employment effects
Brazil	<p>Employment is expected to increase by 1.13 per cent annually between 2010 and 2030, and GDP could increase 0.5 per cent per year on average by reducing pasture areas and protecting forests</p> <p><i>Source: C. de Gouvello: Brazil low-carbon country: Case study (Washington, DC, World Bank, 2010).</i></p>
China	<p>6.8 million direct and indirect jobs could be created by meeting government wind, solar and hydropower targets</p> <p><i>Source: Global Climate Network (GCN): Low-carbon jobs in an interconnected world, GCN Discussion Paper No. 3 (2010).</i></p>
South Africa	<p>Over 106,000 new renewable energy jobs can be created by 2030 under an ambitious “energy revolution scenario” (compared to only 7,500 in the IEA’s reference (BAU) scenario); total energy employment (including coal export jobs) would be 56 per cent higher than in the IEA reference scenario</p> <p><i>Source: J. Maia et al.: Green jobs: An estimate of the direct employment potential of a greening South African economy (Sandown, IDC, Development Bank of South Africa, 2011).</i></p>



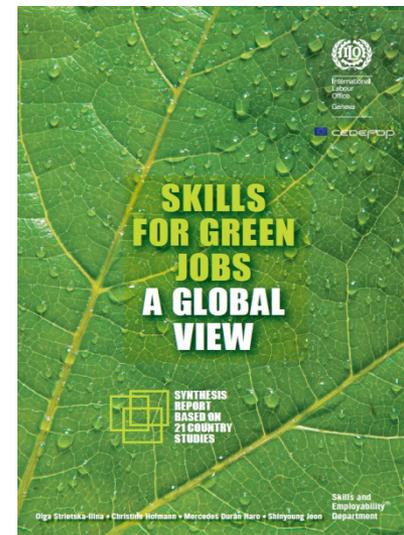
Assessing skills needs and gaps

Skills shortages already pose a major barrier to transitions to green economies and green job creation

Why?

- Underestimated growth of green sectors
- General lack of scientists and engineers
- National skill structure does not meet skills demand
- Low reputation of sectors - failure to attract trainees
- Poor coordination

- Action required at different levels: enterprise, industry, government (national, regional, local), by universities, training providers, research institutes, NGOs and international donors
- Inside and outside existing education and training systems and mechanisms
- Fostering social dialogue





Changing and emerging occupations

Degree of skill change	Occupational change	Typical skills response	Examples
None	None or only quantitative	None or increased training in existing occupation	Bus driver in CNG powered buses; forester
Low	Changing occupation	On-the-job learning or short training courses	Welder in wind turbine production; Organic farmer
Medium	Changing or emerging occupation	Short courses or longer continuous training	Energy consultant in building; car mechanic for electric cars or CNG cars
High	Emerging occupation	Initial training, university degree or longer continuous training	Solar energy technician; eco-designer



Building skills for green jobs

- Expanding green energy and green jobs in Bangladesh
- Vocational education and technical training
- Women empowerment

http://www.youtube.com/watch?v=uPG_PovluyQ





Green Jobs Program Cycle



Thank you

- International Labour Organisation:
<http://www.ilo.org/global/lang--en/index.htm>
- Green Jobs Programme of the ILO:
www.ilo.org/green-jobs-programme
- International Training Centre of the ILO:
<http://www.itcilo.org/en>