



Putting Green Jobs into Practice: some examples from experience

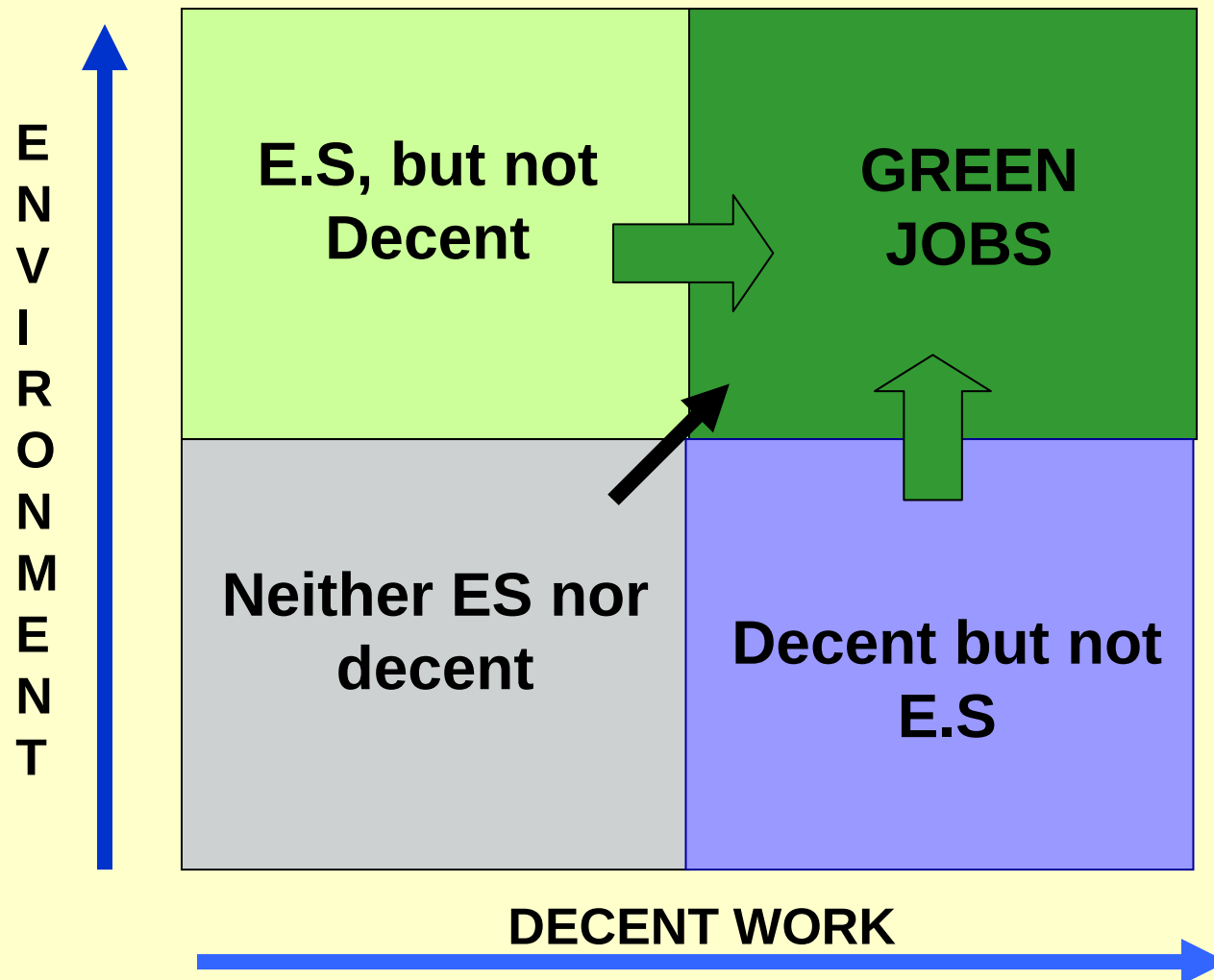
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Green Jobs are Decent Jobs





GJ example: green & decent recycling



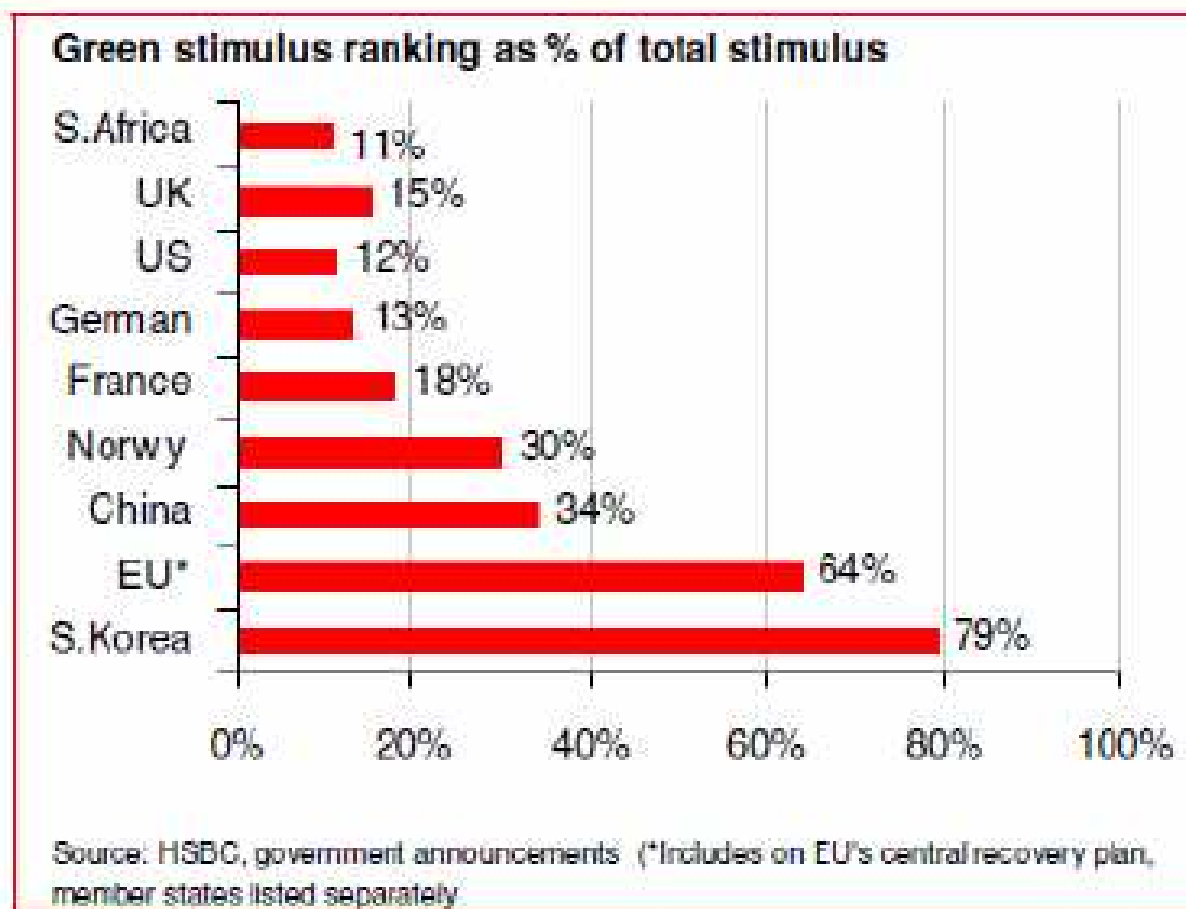


Green jobs can be created in ALL sectors

- ✓ Reduce consumption of energy and raw materials (**dematerialize economies**)
- ✓ Avoid greenhouse gas emissions (**decarbonize economies**)
- ✓ **Minimize waste and pollution**
- ✓ **Protect and restore ecosystems and environmental services**
- ✓ **Adapt to climate change**



Remember the \$ 513 bn of green stimulus?



Source: HSBC (2009) 'A global green recovery? Yes but in 2010' 6 August



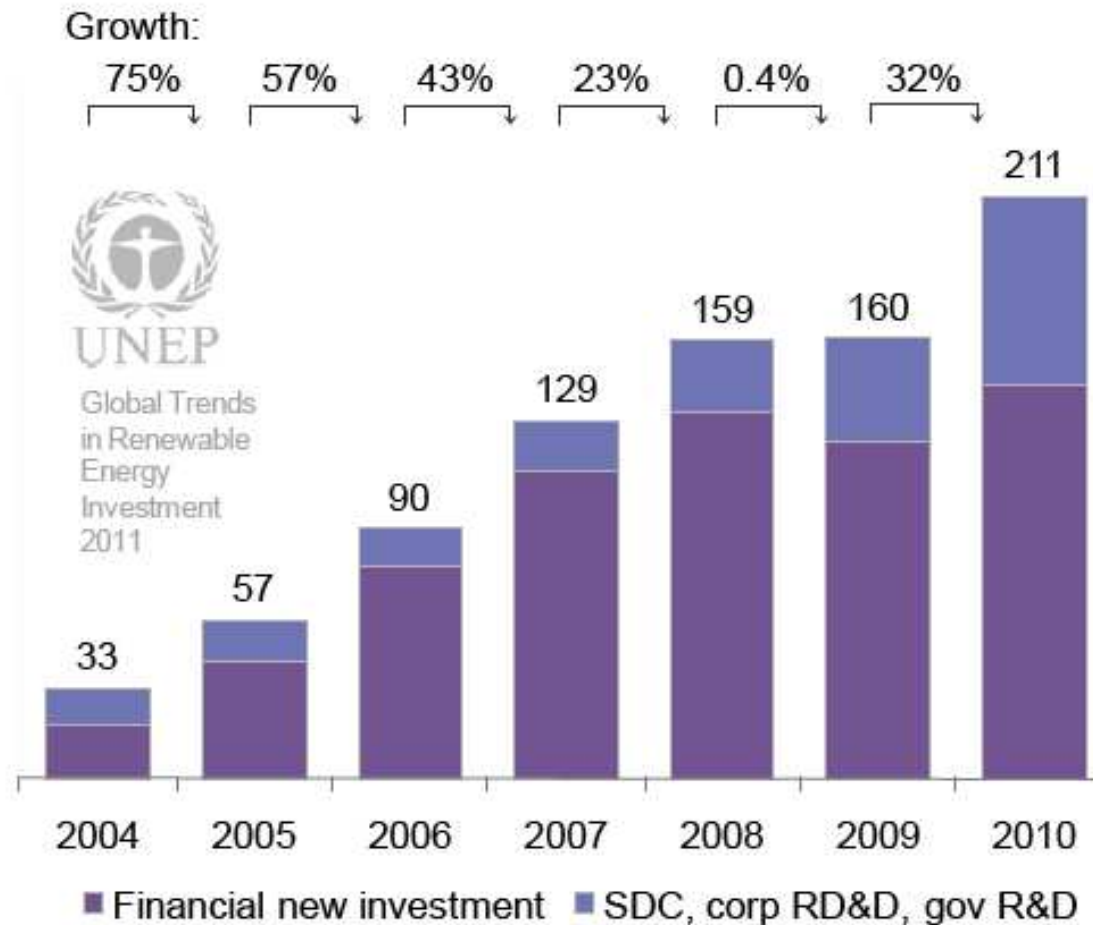
... so let's do a reality check with the renewable energy (RE) sector

- ✓ Projected investments of US\$630 billion by 2030 would translate into at least 20 million additional jobs in the renewable energy sector. (10 folds growth compared to the level of 2006 employment)



Money is flowing faster than we thought

Global new investment in renewable energy 2004–2010 (\$bn)



Note: SDC = small distributed capacity. New investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals.

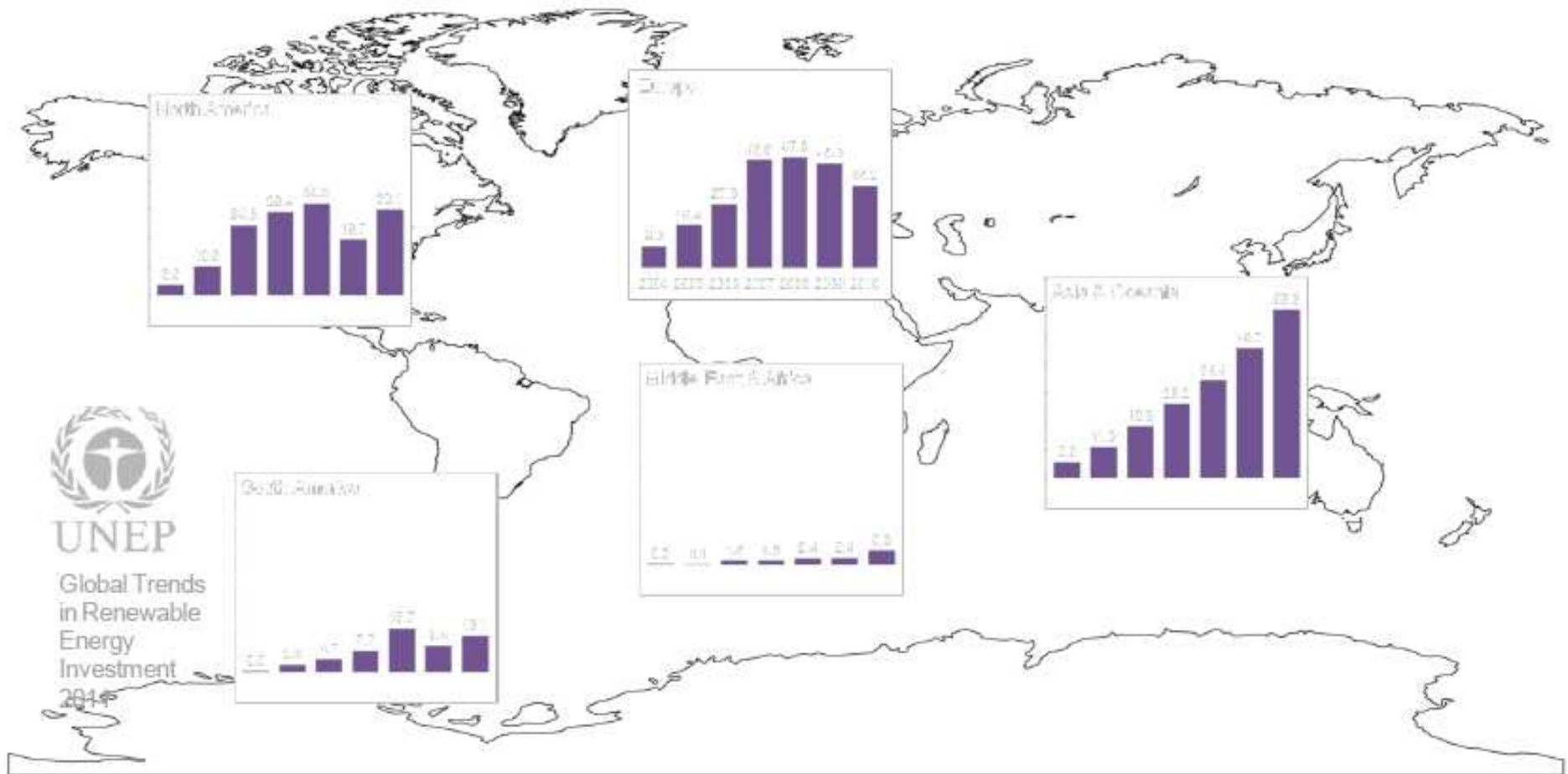
Source: Bloomberg New Energy Finance

Source) Global Trends in Renewable Energy Investment 2011 (UNEP)



Asian RE is fast growing

Financial new investment in renewable energy by region, 2004-2010 (\$bn)



Note: New investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals. This comparison does not include small-scale projects.

Source: Bloomberg New Energy Finance; UNEP

Source) Global Trends in Renewable Energy Investment 2011 (UNEP)



China takes the lead in RE sector

TOP FIVE COUNTRIES – Annual additions in 2010

	New capacity investment	Wind power	Solar PV	Solar hot water/heat ²	Ethanol production	Biodiesel production
1	China	China	Germany	China	United States	Germany
2	Germany	United States	Italy	Germany	Brazil	Brazil
3	United States	Spain	Czech Republic	Turkey	China	Argentina
4	Italy	Germany	Japan	India	Canada	France
5	Brazil	India	United States	Australia	France	United States

Source) Renewables 2011 Global Status Report (REN21)



Other Asia gearing up

- ✓ Indian clean energy investments increase from less than USD 5 billion in 2010-11 to USD 6.5 billion in building some 3.5 gw of for 2011-12.
 - ✓ Adding over 2 gw of wind annually
 - ✓ Aims at 1.3 gw of solar capacity by 2013
- ✓ Pakistan attracts wind investments. It gets ready to announce feed-in tariff (FIT).
- ✓ Japan approves FIT with preferential tariffs on biomass, geothermal, small hydro, solar, wind.
- ✓ Malaysia & the Philippines announces FIT.



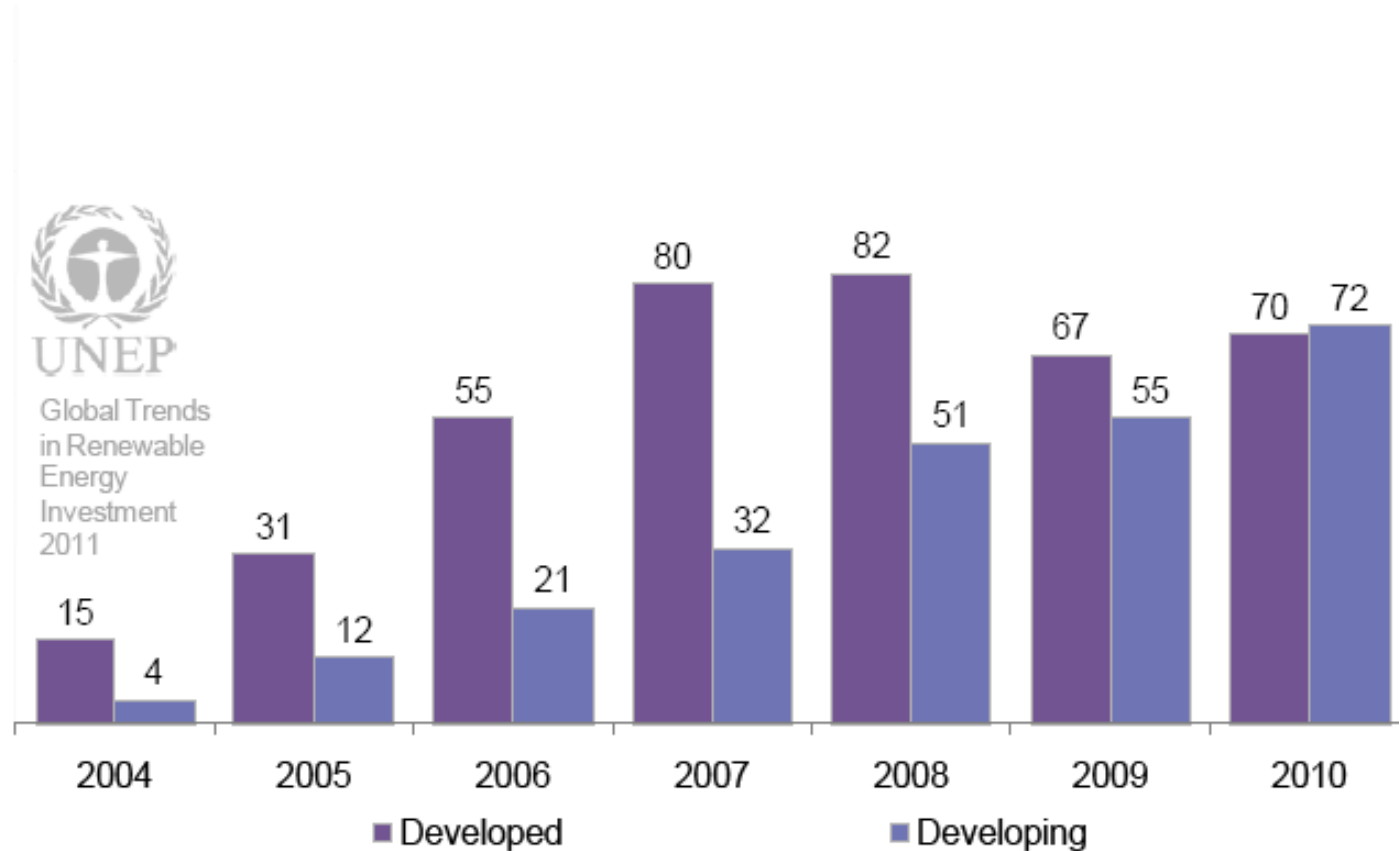
India's high-profile RE projects

- The Solar Park in Gujarat, the largest in Asia with 500 MW capacity
- TERI's Lighting a Billion initiative distributed 40,000 solar-powered lanterns and batteries to 640 villages
- The large-scale wind turbines in Chennai, making India's wind power capacity 5th in the world





... resulting in more RE investments
in the South than the North



Note: New investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals.

Source: Bloomberg New Energy Finance;
UNEP

Source) Global Trends in Renewable Energy Investment 2011 (UNEP)



Some RE jobs counted to date

Industry	Estimated jobs worldwide	Selected national estimates
Biofuels	> 1,500,000	Brazil 730,000 for sugarcane and ethanol production
Wind power	~ 630,000	China 150,000 / Germany 100,000 / United States 85,000 / Spain 40,000 / Italy 28,000 / Denmark 24,000 / Brazil 14,000 / India 10,000
Solar hot water	~ 300,000	China 250,000 / Spain 7,000
Solar PV	~ 350,000	China 120,000 / Germany 120,000 / Japan 26,000 / United States 17,000 / Spain 14,000
Biomass power	-	Germany 120,000 / United States 66,000 / Spain 5,000
Hydropower	-	Europe 20,000 / United States 8,000 / Spain 7,000
Geothermal	-	Germany 13,000 / United States 9,000
Biogas	-	Germany 20,000
Solar thermal power	~ 15,000	Spain 1,000 / United States 1,000
Total estimated	> 3,500,000	

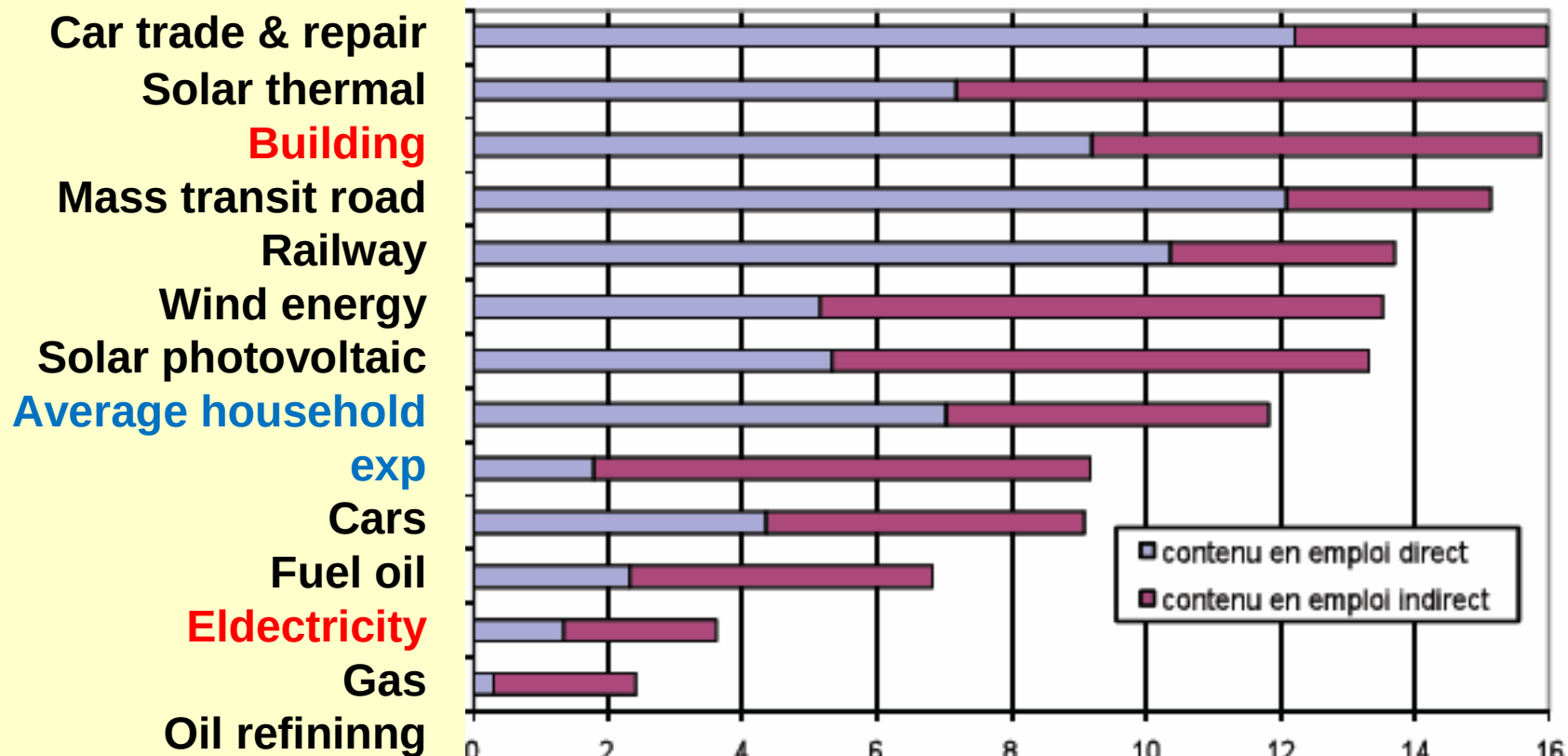
Source) Bird and Summer 2010 quoted in Renewables 2011 Global Status Rep



Net employment:

direct+indirect-substituted+/-
 Direct + indirect empl/m
 induced
 €

Central France



Sources : Insee, Ademe. Calculs P. Quirion (2008)



Electric & hybrid cars are coming to India and generate jobs across the VC



Tata



Reva (running)



Toyota



Chevrolet



Hyundai



Mahindra



Honda



Not in the investment figure, but
Off-grid rural RE are expanding





Off-grid rural RE – cheap & right for BOP

- **Lighting and other small electric needs:** candles and kerosene lumps → hydro, biogas, biomass gasifier, solar and hybrid systems
- **Communications** (TVs, radios, mobile phones): from dry cell batteries and diesel generators → ibid
- **Cooking** (stoves and ovens): wood/dung/straw → improved cooking stoves, biogas, solar cookers
- **Crop drying and other agricultural processing, hot water:** wood/dung/straw → improved stoves, biogas digesters, solar crop dryers/thermal, fans from small RE grid
- **Process motive power:** Diesel engines and generators → solar home system, small wind, mini-grid with hybrid systems
- **Water pumping:** Diesel pumps & generators → wind

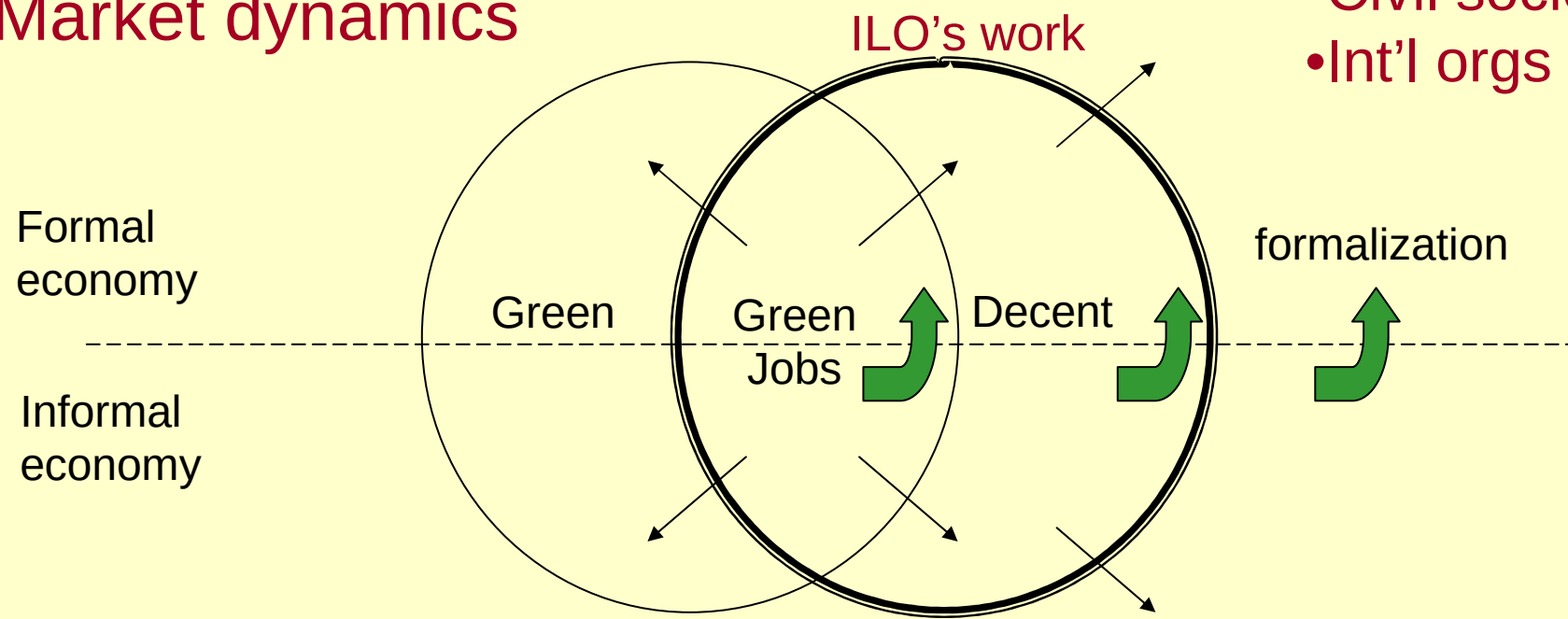


Informal economy & green jobs

Policy & regulatory environment

- Key actors:
- Government
 - Workers
 - Employers
 - Civil society
 - Int'l orgs

Market dynamics





Challenges of putting green jobs in practice

- **Counting & tracking GJ:**
 - GJ mapping to count the net employment in critical sectors (Where are they in a big number?)
 - Labour market statistics to be improved (Do we know them precisely and soon enough?)
- **Policy coherence:**
 - Growth policies – job-rich growth strategies – env/CC policies – quality of jobs concerns – informal economy policies
- **Active labour market policies:**
 - Transformation from brown to green jobs does not happen automatically (Where are the likely gaps?)
 - Loss of jobs may be under-estimated (inclusive “just transition” concerns)



How to mainstream GJ into national policies

- CC policies often missing the GJ aspect
 - Involve Min. Labour, employers & workers in the CC policy consultations
 - Put it into the growth & employment policy discourse (e.g., 5 yr plan, PRSP, UNDAF)
 - Establish a policy coordination platform (e.g., inter-ministerial & multi-stakeholder task force on GJ)
 - Identify & prioritize policies and sectors to look into
 - Identify & address the critical knowledge gaps
 - Assist policymakers & stakeholders in the design, implementation and enhancement of relevant policies



Many things are being done by the nat'l stakeholders

- CC policies are being developed and implemented
- Often, it is a matter of talking between ministries
 - RE ministry & Labour ministry on RE skills gaps
 - Construction ministry & Labour ministry on skills requirements of energy efficiency building
 - Industry/SME ministry & Labour ministry to mainstream GJ into on-going industrial policies and SME support
- Employers organizations are often vocal promoter of green economy initiatives
- Trade unions are already in the global CC discussion to make sure workers are protected in the great transformation



... but ILO can assist in

- Establishment of the GJ task force (inter-ministerial & multi-stakeholder talk is not always easy to start)
- GJ training, CoP, knowledge sharing (GJ discussion is new multi-disciplinary one, not limited to env/CC experts)
- Mapping and labour market statistics
- Analytical work on growth-employment-environment-DW nexus (e.g., social floor as a growth strategy)
- Policy & regulatory impact assessment on GJ aspect (CC policies, trade policies, fiscal policies)
- Proving policy effectiveness through pilot & action learning



Redefining dairy sector from polluter
to green and job-rich sector





India's dairy sector

- The largest milk producer of the world.
- It constitutes 5 per cent of GDP and involves 70 million farming households.
- Growing faster than the whole agriculture sector
- Urban vegetarian demand is a big pull for dairy products
- Cooperative channel controls more than half of the milk, but leveling off. Commercialized dairy is rapidly expanding, integrating the large unorganized sector into its value-chain



Knowledge & policy gap

- Growth in peri-urban dairy farms is widely observed phenomenon (Delhi, Mumbai, Haridwar, Jabaopur), but not quantified nor analyzed.
- Pollution of water and urban environment by cow/buffalo dung is increasingly recognized by the local population and authority.
- Dung value-chain is getting commercialized and employing numerous middlemen, labourers and “dung cake women,” but not known to the authorities.



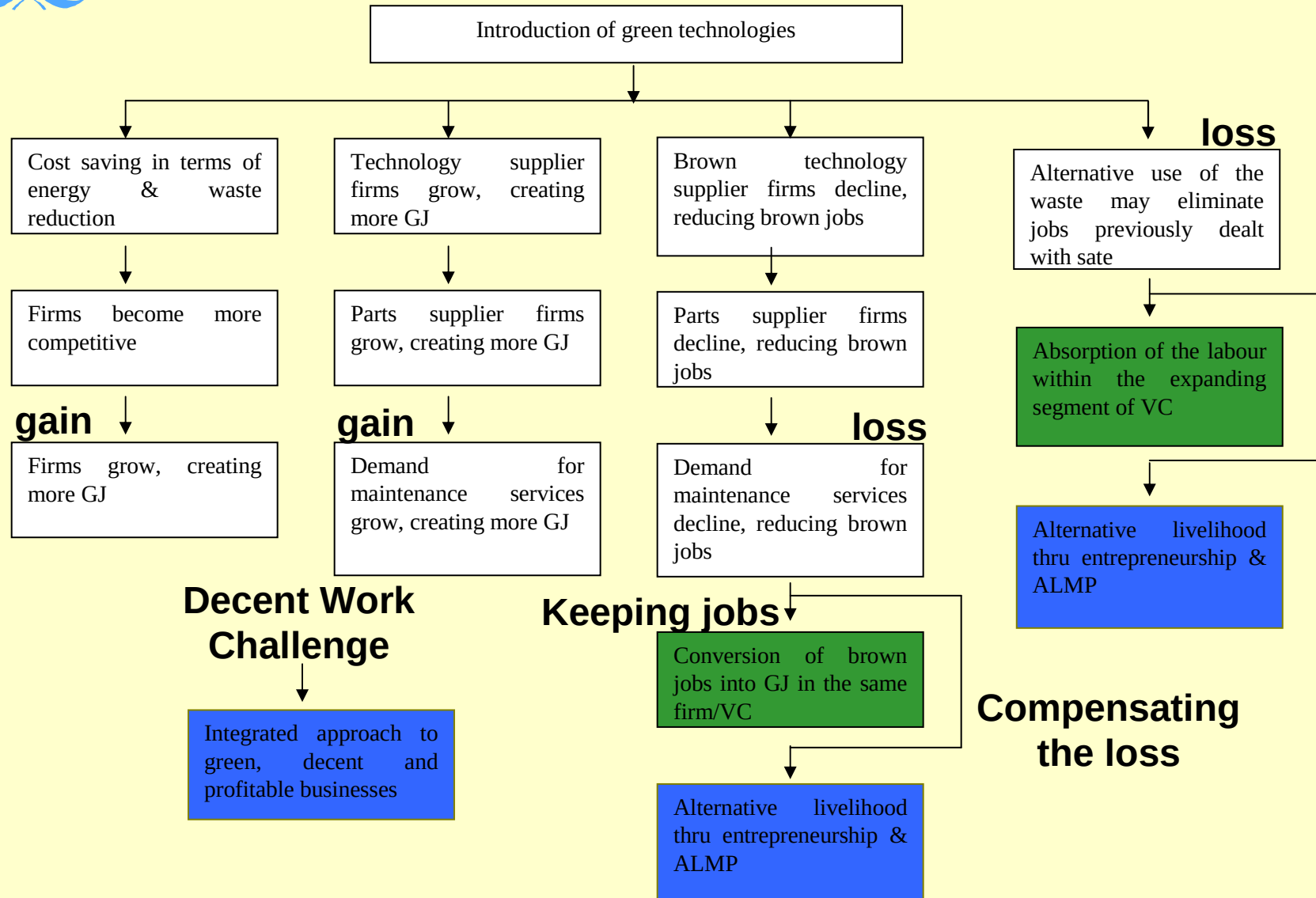
Emerging biogas solutions

- Large-scale biogas digesters with imported technologies by Ayur group
- Medium-scale biogas digesters with local technologies by local dairy farmers
- Household biogas system for cooking fuel



Jobs created or lost?

How about quality?





The Large-scale biogas digesters

- Expected to absorb 53% of the dung in the peri-urban area (1,500 MT per day)
 - Contributes to reducing pollution, but not completely
 - Other measures discussed (dung capture from the river, dairy zoning)
- Slurry from the biogas digester can be used for vermin compost
- Not commercially feasible even with the state subsidy
- PPA rate is temporarily set low (Rs.3.36/kwh) while PPA rate for the solar technology is 5-6 times higher (Rs.14-17/kwh).
- Power shed prevents from meeting the CDM target



The medium-scale biogas digesters

- Commercially feasible?
 - The application for the subsidy scheme not user-friendly
 - Dairy farmers hesitant to invest while feasibility is uncertain
- Introduce a user-friendly feasibility software?



Dung value chain providing livelihood to the poor women and men

- Organized channel through numerous middlemen as VC integrator
 - Several hundreds to thousands of labourers and dung cake women hired for 8 mth of dry season
 - Dung cakes are sold to hundreds of brick kilns
 - Individuals working at dairy farms make cow dung at the roadside
- Jobs will be lost or negatively affected by the expansion of the large biogas plants



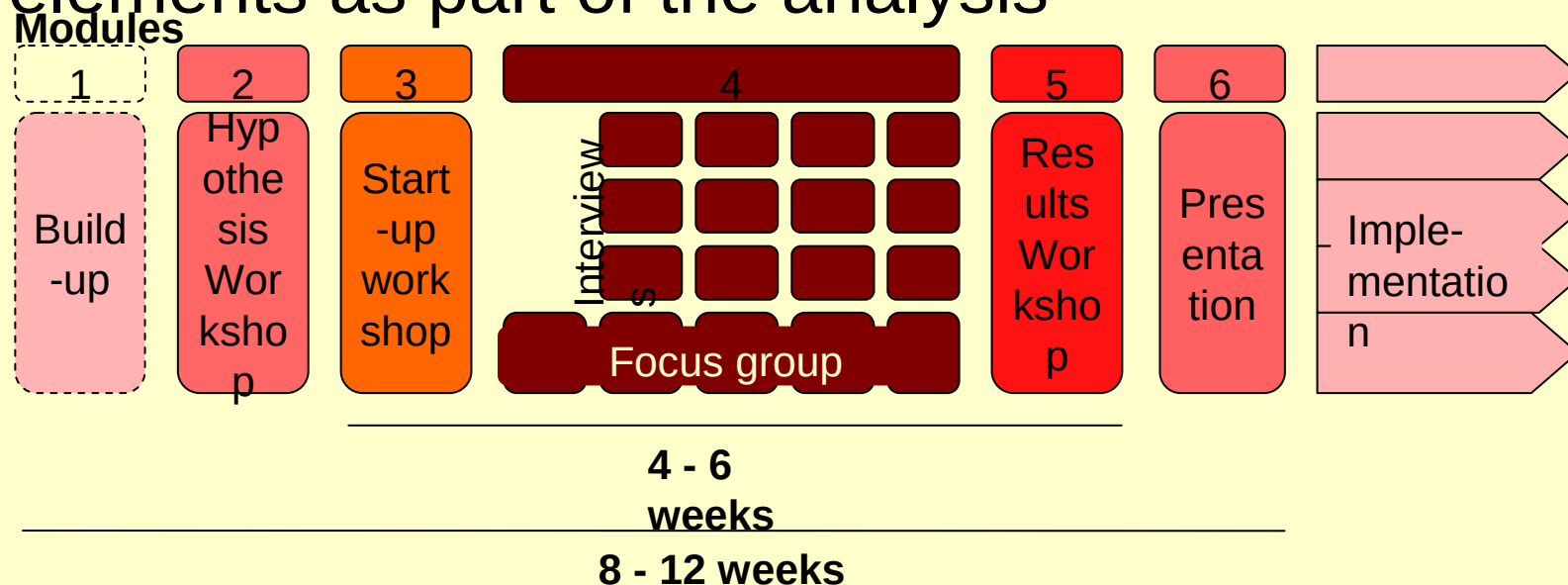
The household biogas digesters

- State subsidy programme through 3 agencies
- Clear benefits on GHG emission reduction, family economy, health of women in kitchen
- But, many systems found dysfunctional
 - problem analysis through a survey and development of a problem solving toolkit
 - → Improved performance of the biogas programme of an agency



Green VCD approach

- Structured participatory diagnosis and action planning
- VC steering committee by local stakeholders
- Put the circular/recycling channel and policy elements as part of the analysis





Policy feedback

- Provides feedback to the GJ task force at the national level
 - PPA rate comparing total benefits and mapping the commercialization scenario
 - Power shed as a threat to the whole CDM and feasibility of the RE projects
 - Efficiency issue of the HH biogas programmes
 - Enhanced Green VCD to be applied for the state and district-level action plan on CC



Slow progress of state level APCC

- Common challenge: CC analysis done by experts, but what actions to take?
- MoEF plans training of state officials on APCC. GJ session to be included.
- Several states expressed interests in GJ
- In response to a request from Gujarat, ILO is starting the GJ mapping and the assessment of their integrated dairy model



Other tools of the ILO

- FIP/SCORE with cleaner production (phase II project starting)
- Greener Business Asia
- Making MG-NREGA greener & more decent work (new)
- “Generate Your Green Business Ideas” of the flagship SIYB entrepreneurship programme



SCORE makes enterprises more competitive
and cleaner in national and global markets



- Two day classroom training for managers and workers
- Local experts for organization and intensive follow-up
- Worker / Manager approach to continuous improvement



Safer working environments





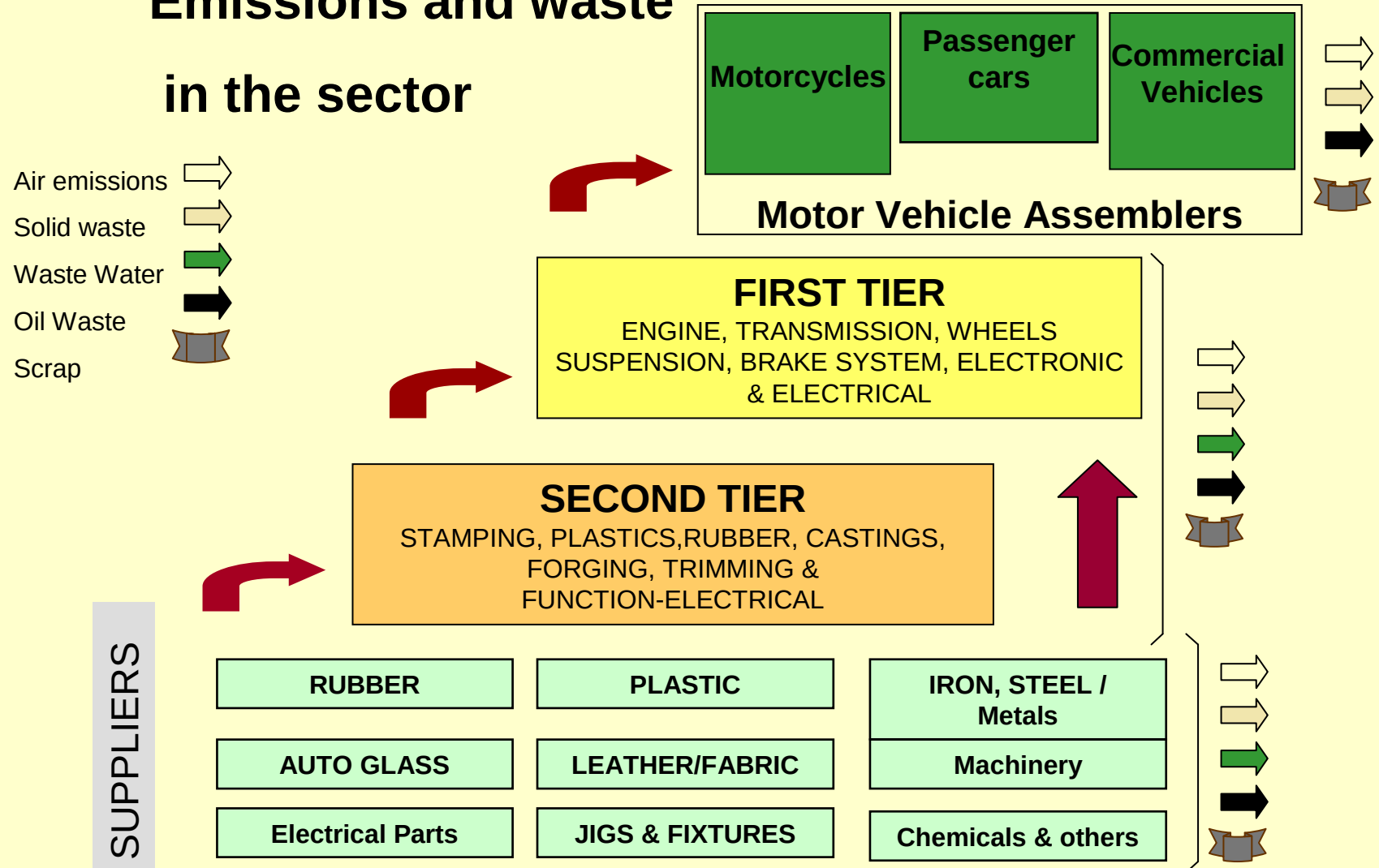
Higher productivity





GBA further strengthens the env. elements through research & training

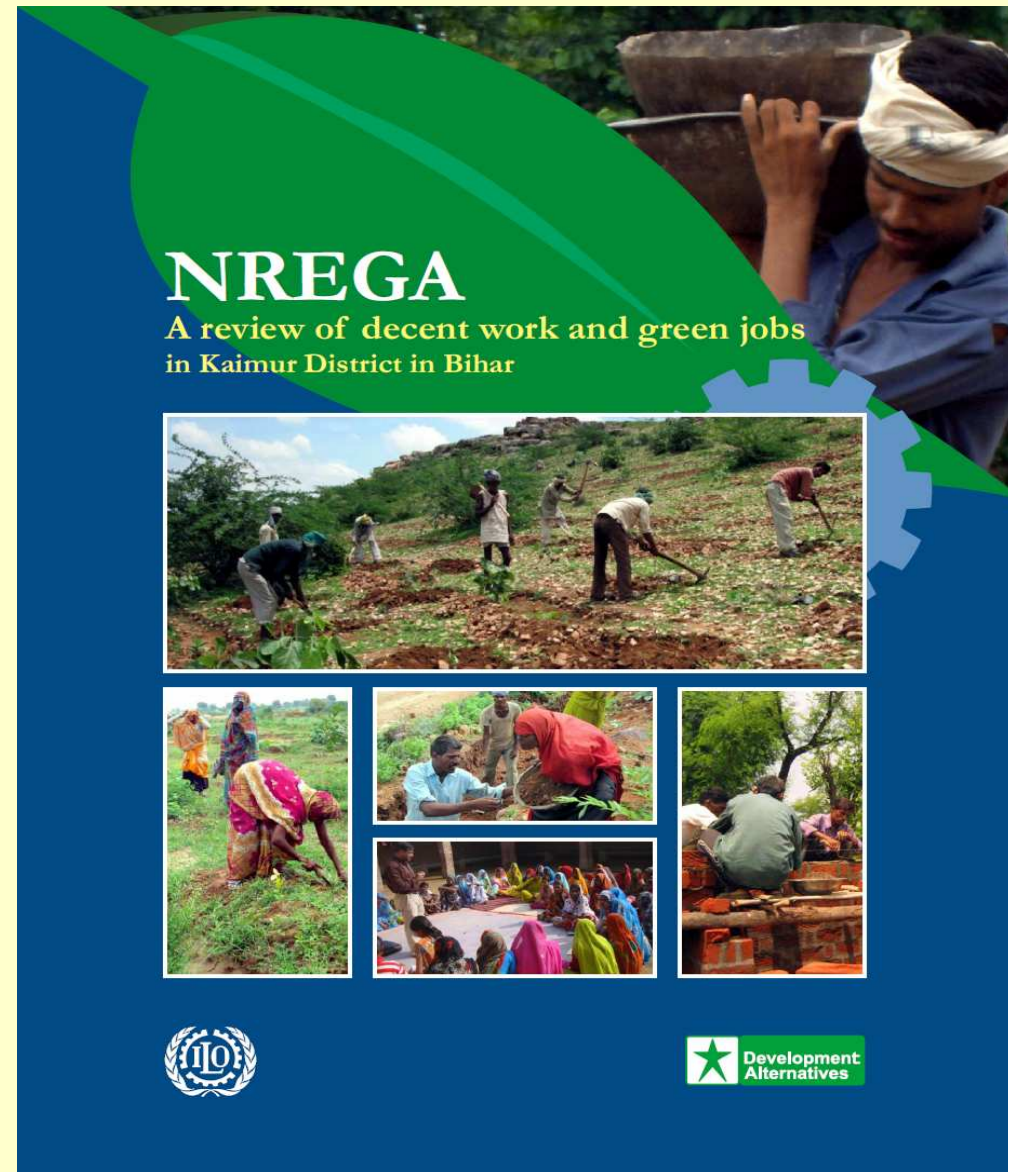
Emissions and waste in the sector





Employment guarantee is found green

- The ILO study found that the jobs created under NREGS are considered Green Jobs. Same for the jobs created to improve rural connectivity; the labour intensive way of constructing roads is carbon friendly





“Generate Your Green Business Ideas” – sample pages from the workbook

3. What kind of businesses are you fittest to start?

You may give some thoughts to the following questions: What are the major types of businesses that fit you best? There are four major types of businesses:

- Retailer
- Wholesaler
- Manufacturer
- Service provider



Retailer

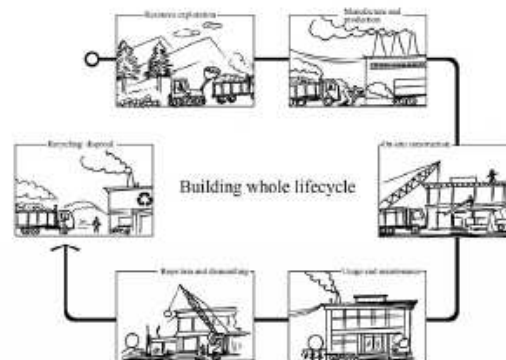


A retailer purchases ready-made products from wholesalers or suppliers and makes profits by reselling them to the customers. Grocery stores, hardware stores, clothing stores and stationary shops are all retailers.

6. Lifecycle analysis

Green industry is the market solution of environmental problems. For green business entrepreneurs, apart from some necessary general qualities and skills required for an entrepreneur, they also need some special thinking methods and tools, to help them observe and analyze problems from multiple dimensions, so as to find business opportunities and access points.

Lifecycle is another systematic thinking method; unlike systematic thinking of the recycling economy on material flow and energy flow, lifecycle analysis focuses on the whole process of actual products ranging from production to sales and disposal, namely the environmental impact of “Lifecycle”. From production—mining, planting, refinery, molding, design, assembly, packaging—sales to consumption—disposal—directly enter industrial recycling, or entering the natural world to wait for decomposition and recycling.



Building whole lifecycle analysis

Lifecycle thinking of business entrepreneurs:

Thinking on lifecycle can be applied to any consumption articles. Manufacturers of consumption articles can use this method to analyze and reduce the impact of their own products on the environment, which is often accompanied with economic benefits. As a newcomer into the market, you can pay more attention to how to enable industrial products (consumption articles and three wastes) to ultimately enter natural cycle in a

Case study

Thin Bamboo Makes for a Major Industry



He Jie was born in Pingchang County in Bazhong region, Sichuan province. He studied Chinese in the university as undergraduate, and economy as postgraduate. After obtaining a doctoral degree from Beijing Film Academy, he joined CCTV to work in the field of strategic planning. In the eyes of other people, He Jie had carved out a brilliant career. Nevertheless, He Jie was not satisfied with his job, he hoped to start business in the future by himself, and do some challenging things in which he was interested in.

But things are easier said than done. The first difficulty He Jie confronted was what kind of business to start. One day, when He Jie was watching TV at home, one program about successful business startup by making charcoal with bamboo aroused his interest. After watching the program, He Jie found it hard to calm down for a long time. His first thought was that there was a large quantity of bamboo in his hometown. He could also do something by using such resources. He Jie was displayed no impatience: in starting a business, he first used the Internet to obtain preliminary understanding about relevant information on bamboo products such as bamboo charcoal, bamboo laminated board. Then, he contacted friends working in the International Network for Bamboo and Rattan, and made a detailed inquiry on the development of domestic and overseas bamboo industry. After that, He Jie also visited Zhejiang and Fujian where the bamboo industry was very developed, and personally visited many enterprises specializing in the production and sales of bamboo products. In order to more accurately grasp market information, he also returned to his hometown Sichuan to communicate with bamboo growers and the local agricultural and forest departments.

Through massive market investigation, He Jie discovered that China boasts rich bamboo resources; the output of bamboo industry has topped RMB 70 billion. Bamboo not only features fast growth and high yield, but also has wide application. Using unused land to plant bamboo facilitates the preservation of mountain and forest, using bamboo material to process various bamboo products can save huge volume of timber; the processed bamboo charcoal features excellent absorption capability, and can be used for treatment of urban river sewage and household air purification. Bamboo industry is a green industry, with the improvement in people's awareness in environmental protection, the market demand for green products increases continually. Meanwhile the state government also has introduced many policies to encourage the development of green environmental protection industry.

In 2005, He Jie quit his job in CCTV, and returned to his hometown Pingchang County to start a business. He set up Sichuan Southwest Bamboo Eco Development Co., Ltd to engage in the planting and processing of bamboo, in order to bring along farmers to participate in the development of bamboo industry. Pingchang County is a key state-level county for poverty alleviation, there are many mountain ranges in its natural surroundings, which is suitable for growing bamboo.



Recommendations for policy

- **Win – win not by default, but by design**
- **Policies that work:**
 1. **Map** employment/income opportunities and risks
 2. **Start with low-hanging fruit**
 3. **Target:** youth, women, the poor, SMEs
 4. Engage stakeholders in **social dialogue**



Useful websites

- *Green Jobs India site:*
http://www.ilo.org/newdelhi/whatwedo/projects/lang--en/WCMS_123411/index.htm
- *ITC-Turin's Green Jobs training site:*
<http://greenjobs.itcilo.org/>
- *LED knowledge website:* <http://www.ledknowledge.org/>
- *Boosting Employment through Small Enterprise Development:*
http://www.ilo.org/empent/WorkingUnits/lang--en/WCMS_DOC_ENT_DPT_SEE_EN/index.htm
- *SCoRE:*
http://www.ilo.org/empent/Whatwedo/Projects/lang--en/docName--WCMS_101367/index.htm
- *Informal economy resource guide:*
<http://www.ilo.org/public/english/support/lib/resource/subject/informal.htm>