Powering G8 Job Creation

Creating jobs while protecting the climate

G8 leaders at L'Aquila have the opportunity to stimulate economic recovery while lowering carbon emissions through investing in green jobs. Greenpeace's newest research shows this shift will create 1 million more jobs in renewable energy by 2020 – 460,000 more than would be created by continuing with conventional power, and will cut power related CO_2 emissions by 50% by 2030.

Background

Moving from coal and nuclear energy to renewables is a necessity if we are to avoid runaway climate change. Responsible governments - including the G8 - must acknowledge this to provide jobs and retraining to communities affected by this transition.

Greenpeace International is launching a new report in September 2009 that calculates the global green job creation potential based on the '*Energy [R]evolution: a Sustainable Global Energy Outlook*'[1]. This briefing focuses on some of the key findings regarding G8 nations. This includes the potential for job creation comparing the situation if we continue business as usual to moving to clean energy production up to 2030.

Energy [R]evolution highlights:

The Energy [R]evolution for the G8 countries sets a greenhouse emissions reduction target of 40% below 1990 levels by 2020 and at least 80% below 1990 levels by 2050. Based on today's CO_2 emissions for the G8 countries – the United States, Canada, Germany, the United Kingdom, Italy, Japan, Russia and France – the total CO_2 reduction in the power sector could be cut by almost 50% by 2030.

Under the Energy [R]evolution:

- Emissions peak at 2015 and decline thereafter.
- Emissions reductions are achieved through existing technology such as energy efficiency, renewable energy and combined heat and power generation. Coal and nuclear power are gradually phased out.
- One million more renewable jobs are created[2] by 2030.
- By 2030 it projects an 18% reduction in electricity demand compared to keeping the current energy mix.
- In 2020, the scenario for G8 countries projects renewable electricity capacity of 978 GW, supplying 32% of total electricity production, compared to 20% if business as usual continues.
- By 2030, installed renewable energy technologies will grow to 1,500 GW in 2030, accounting for 50% of electricity generation.
- The total value of the renewable industry would triple from about USD100 billion (€ 70 billion euro) in 2007, to USD 347 billion in 2020. By 2030 over USD 420 billion could be invested in renewable energy sources.

[1] In October 2008 Greenpeace International and the European Renewable Energy Council (EREC) published a report called Energy [R]evolution: a Sustainable Global Energy Outlook that sets out a vision for a low-carbon global energy supply comparing it to the energy projection put forward by the International Energy Agency (IEA 2007).

[2] Within the limits of data availability, the figures presented are indicative of employment levels under the two scenarios.

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Employment in the energy sector – Results for G8 countries

- By 2020, across the G8, energy sector jobs in the Energy [R]evolution scenario are estimated at about 1.4 million, about 460,000 more than in the business-as-usual scenario.
- By 2030, investing in renewables and energy efficiency will create about 2.1 million jobs, 650,000 more than conventional energy (reference scenario).
- More than 1.8 million jobs in the renewable energy sector would be created in the Energy [R]evolution scenario – about 1 million more than in the reference scenario – compensating for about 394,000 jobs lost in fossil and nuclear power generation.

Figure 1 shows the number of jobs under both the Energy [R]evolution and the business-as-usual scenarios by technology and type: operations, maintenance and fuel (O&M and fuel) and construction, manufacturing and installation (CMI) in 2010, 2020 and 2030. Combined heat and power generation is included under the fuel type.

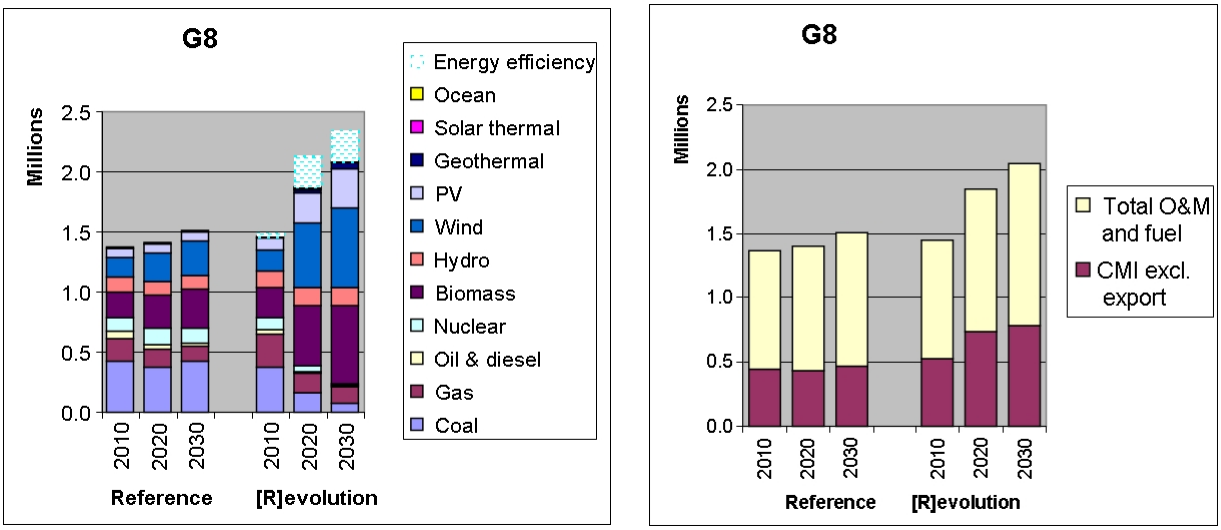

Figure 1 G8 jobs by technology and type in 2010, 2020 and 2030
'Reference' means conventional energy / business-as-usual

As can be seen, by switching to zero-carbon energy, jobs increase significantly from 1.4 million in 2010 to 1.8 million by 2020, and then reach 2.1 million in 2030. If G8 countries do not switch, energy sector jobs will merely stabilise around 1.4 to 1.5 million jobs by 2010 and 2030.

By moving to a power supply based in renewables, G8 electricity use is reduced by 11% in 2020 compared to business-as-usual. This will require a major programme of retrofitting buildings in every region, creating a large number of additional construction jobs in the next decade.

By 2030, construction jobs from energy efficiency may not be as significant, as building retrofits should be completed and new construction practices to meet improved energy standards should have become integrated into normal construction and manufacturing techniques. However, there is likely to be significant growth in jobs associated with energy management, both at the facilities level and in grid management by 2020 and 2030, but it is beyond the scope of this analysis to assess numbers.

Figure 2 (overleaf) shows the change in job numbers under both scenarios for each technology between 2010 and 2020, and 2010 and 2030. There is a decrease in coal power jobs in both scenarios between 2010 and 2020, but strong growth in renewable energy jobs leading to a net gain in employment. Growth in gas generation jobs in the business as usual scenario is not sufficient to compensate for the losses in coal jobs.

Methodology: Energy [R]evolution scenarios for G8 countries

Greenpeace International and the European Renewable Energy Council set out a vision for a sustainable energy pathway for the future: The Energy [R]evolution. The reference scenario (business-as-usual/conventional energy) is the International Energy Association's 'World Energy Outlook 2007' projection, extrapolated from 2030 to 2050.

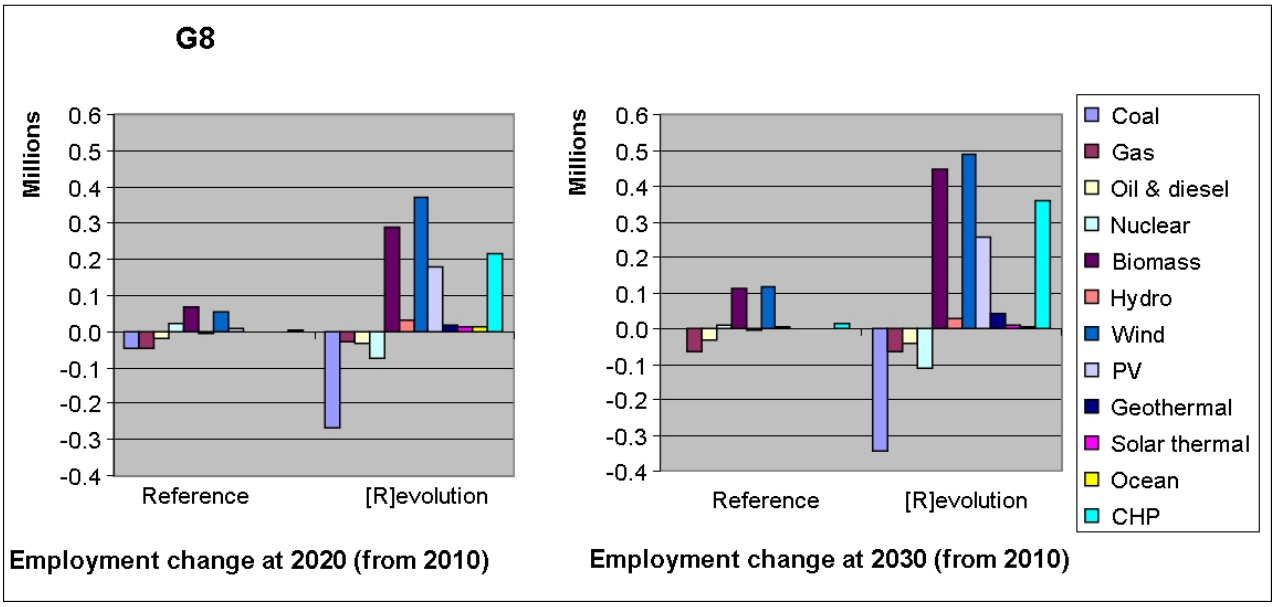

Figure 2 G8 employment change in 2020 and 2030, compared to 2010

The Energy [R]evolution scenario was developed to show how, technically and financially, the world could increase its production of renewable energy by nine times, replacing nuclear and a proportion of coal-fired power, to avoid catastrophic climate change.

While the scenarios for six G8 countries are taken from recent Energy [R]evolution scenario publications (Canada, USA, Russia, Italy, France and Japan)[3], the two remaining scenarios for Germany and the UK are unpublished energy concepts by Greenpeace.

Two key underlying drivers of energy demand are population development and economic growth. The Energy [R]evolution scenario uses the same GDP and population assumptions as the International Energy Agency 2007 projection up to 2030 (the limit of this study). The third key driver of future global energy demand is energy intensity i.e. how much energy is required to produce a unit of GDP. This is a key point of difference between the energy [r]evolution and the reference scenarios. The Energy [R]evolution scenario decouples energy consumption from economic growth through efficiency measures, so energy intensity is significantly lower than the reference scenario. Thus energy efficiency displaces a significant share of electricity consumption.

Employment is projected at 2010, 2020, and 2030 for each region by using a series of multipliers and the projected electrical consumption. Only direct employment is included in this analysis, namely jobs in construction, manufacturing, operations and maintenance, and fuel supply associated with electricity generation.

These calculations are made using cautious, informed estimates. The Australian-based Institute for Sustainable Futures, specialists in forecasting and modelling, undertook the main calculations, using inputs from the Energy Information Association (EIA), European Renewable Energy Council (EREC), USA National Renewable Energy Laboratory (NREL), Renewable Energy Policy Project (REP), Centre of Full Employment and Equity (CoFEE), and the International Labour Organisation (ILO).

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[3] See www.energyblueprint.info