



## Double dividend and revenue neutrality

### Key point

- *Double dividend and revenue neutrality principles enhance effectiveness, public acceptance and feasibility of environmental tax and fiscal reform measures.*

### Double dividend and revenue neutrality explained

The double dividend hypothesis states that a revenue neutral restructuring of the tax system, whereby green taxes are increased in proportion to a decrease in traditional taxes (income tax), could not only improve environmental quality (the first dividend) but also reduce the distortion of the tax system and the cost of labour, subsequently generating higher levels of employment (second dividend).

Revenue neutrality is a fiscal policy tool that can be used to overcome political resistance to an increase in environmental taxes by seeking to have the same proportional reduction in income tax, pension contributions or possibly even value-added taxes (VAT), while striving to maintain a net-zero increase in the overall taxation of the economy.

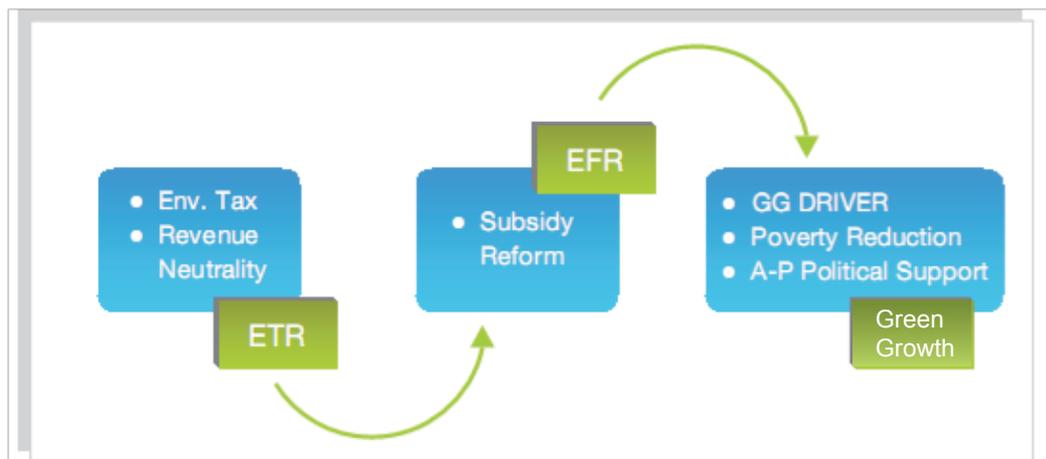
### How they work

The combined application of carefully planned and designed environmental tax reform (ETR) and environmental fiscal reform (EFR) measures create opportunities and mechanisms for recycling newly generated revenue from environmental taxes to new economic activities, which are beneficial both to the environmental/ecological quality (waste management, pollution and traffic control, resource efficiency) and to the social quality (job creation, growth of economic sectors, income generation).

This approach is often combined with revenue neutrality, ensuring that while transferring the burden of taxes away from “goods” (labour and savings) and more towards the “bads” (waste and pollution) through environmental taxes, a net-zero increase in the level of taxation on the economy is achieved.

Newly generated revenue from reductions in perverse subsidies for environmentally harmful activities and revenue from environmental taxes can be recycled in a number of ways. One option is to use it to offset traditional taxes that distort economic efficiency, such as personal income tax, corporate income tax and social security or health care contributions. Such action could further the political acceptance of environmental taxes, improve the competitiveness of firms by reducing their tax burden and, as the double dividend hypothesis proposes: i) improve ecological quality; ii) while yielding higher economic growth and employment. The elimination of perverse subsidies can have a major positive influence on revenue accumulation, resulting in a net increase in unallocated budget.

Figure 1: The double dividend through environmental tax and fiscal reforms



The prospects for winning the double dividend varies from country to country and depends on the structure of relative preferences (the demand elasticity for 'dirty' goods and resources) and infrastructure available, the levels of investment in environmental research and development and the low use of distorting non-environmental taxes.

It is also important to carefully design a supporting policy system, including regulations and investment environment, that will create incentives for a change of consumers towards environment-friendly consumption and to provide alternatives to more resource-inefficient lifestyles. For example, a fuel tax targeting less use of individual vehicles will have little positive impact if mass transit infrastructure is not improved and provided as an alternative. Part of the success of Singapore's congestion charges was the investment in the very efficient public transportation infrastructure – and it was highly supported by the public.

### Strengths of double dividend and revenue neutrality

- **Carbon emissions reductions:** In seven European countries that have implemented ETR (Denmark, Finland, Germany, Netherlands, Norway, Sweden and the United Kingdom), energy and carbon taxes are estimated to have brought 2–7 per cent reductions in carbon emissions from the business-as-usual scenarios without such taxes in place.<sup>1</sup>

Similarly in Asia, results of recent research show that many countries have shifted from subsidizing fossil fuel taxes, which increased the budgetary liquidity of their governments and contributed to reducing CO<sub>2</sub> emissions per unit of GDP, as illustrated in figure 3. There is a strong correlation between the decrease in subsidies and the introduction of fuel taxes and a positive trend in reducing CO<sub>2</sub> emissions in the selected countries studied.

- **Improved energy-efficiency:** Rising prices of energy and resources businesses to look closely at their activities. The frequent result is that businesses discover opportunities that were hidden to them that improve energy efficiency at a low or negative cost, thereby improving economic efficiency as well as ecological efficiency.<sup>2</sup> The increased prices also create impetus for technology innovation as businesses

<sup>1</sup> Green Fiscal Commission, *The Case for Green Fiscal Reform: Final Report of the UK Green Fiscal Commission* (London, 2010) p.21

<sup>2</sup> Green Fiscal Commission, *Competitiveness and Environmental Tax Reform* (London, 2010), p.3. A slightly different perspective includes the argument of the Porter hypothesis that increased carbon/energy taxation would force firms to innovate both in their processes and products, thereby improving competitiveness and gaining market shares (M. Porter and C. Van Der Linde, "Toward a new conception of the environment-competitiveness relationship", *Journal of Economic Perspectives* (1995), vol. 9, No. 4; Ian Christie, Heather Rolfe and Robin Legard, *Cleaner Production in Industry: Integrating Business Goals and Environmental Management* (London, Policy Studies Institute, 1995); Ben Kriechel and Thomas Ziesemer, "The environmental porter hypothesis: theory, evidence, and a model of timing of adoption", *Economics of Innovation and New Technology* (2009), vol. 18, No. 3. pp. 267-294; Paul Ekins and Stefan Speck, eds., *Environmental Tax Reform (ETR): A Policy for Green Growth* (Oxford, Oxford University Press, 2011)). Empirically, there are mixed results in European countries and the evidence in developing countries is very limited.

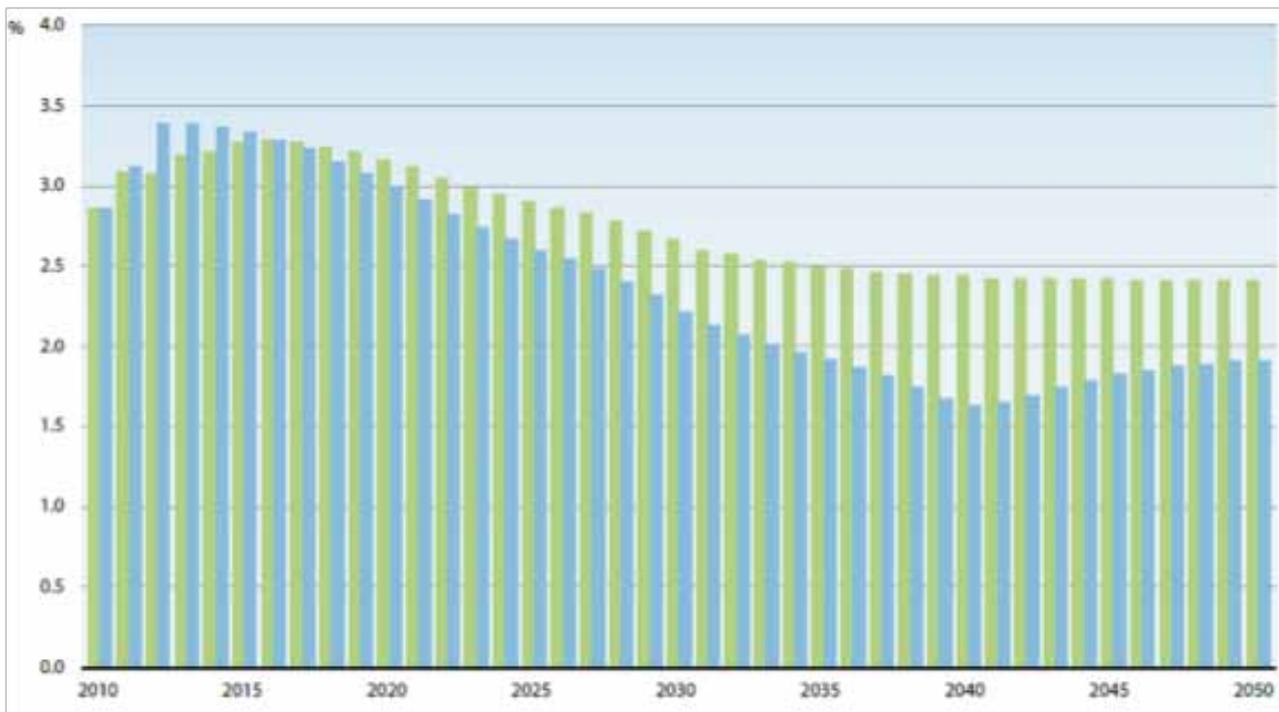
attempt to discover ways to achieve their efficiency goals at less cost.<sup>3</sup> Improvements in energy efficiency can, in turn, reduce energy costs, increase a business's resilience to energy price volatility and increase productivity. Empirical evidence from 15 European countries over the period of 1995–2002 show reduced energy intensity of economic activity with the energy or carbon taxes.<sup>4</sup>

**Higher income growth and employment (economic dividend)**

In conjunction with the first dividend, EFR and ETR can generate a second dividend of economic growth, particularly in the long term. This economic growth can come in the form of higher long-term GDP growth, increased employment and a green industry.

- **Higher GDP growth:** Econometric models by the United Nations Environment Programme show that in the context of rising resource and fuel prices and accelerating natural resources depletion over time, investing 2 per cent of global GDP in natural capital and efficiency improvements can generate higher economic growth compared with a business-as-usual scenario and lower environmental pressure by as early as 2017.<sup>5</sup>

**Figure 3: Projected trends in annual GDP growth rates**



Source: United Nations Environment Programme, *Green Economy Report* (Nairobi, 2011)

Higher GDP growth compared with a business-as-usual scenario is empirically and theoretically supported by cases from Europe. European countries with ETR (including Denmark, Finland, Germany, Netherlands, Sweden and United Kingdom) have shown gains in GDP growth. A study of the Green Fiscal Commission of the United Kingdom found that these countries experienced up to a 0.5 per cent increase in GDP growth while reducing fossil fuel demand by 2.6 per cent on average as a result of ETR, an example of relative decoupling.<sup>6</sup> Modelling exercises also indicate that with a more robust ETR and EFR measures, countries in Europe would yield higher double dividend, as the following box points out.

<sup>3</sup> Sustainable Prosperity, *Managing Carbon Revenue*, Policy Brief (Ottawa, 2011), p. 2.

<sup>4</sup> Paul Ekins and Julia Tomei, "Stimulating eco-efficiency in Asia and the Pacific: The role of public policy", Conference paper presented at the Second Regional Policy Dialogue: Role of Public Policy in Providing Sustainable Consumption Choices: Resources Saving Society and Green Growth, Beijing, 23-24 May 2006.

<sup>5</sup> United Nations Environment Programme, *Towards a Green Economy* (Nairobi, 2011).

**Box 1: Experiences with ETR and EFR in Europe – double dividend effect**

ETR in Europe began in the early 1990s, adopted by Sweden, Denmark, Norway, Finland and the Netherlands followed by Germany and the United Kingdom in the late 1990s. Numerous studies have shown that double dividends have been achieved in these countries, but the evidence is limited due to the relative novelty of the measures introduced as well as the difficult to isolate the impact of ETR out of the broader policy macroeconomic policy mixes that were instituted at the same time. Still, it is notable that there is no clear evidence of the negative economic impacts of environmental taxes; industry's claims to the contrary are widely seen as overstated.<sup>7</sup>

It is encouraging news that European countries with ETR (Denmark, Finland, Germany, Netherlands, Sweden and United Kingdom) have shown, at a minimum, a weak double dividend with their fossil fuel demand reduced by 2.6 per cent on average while positive GDP gains of up 0.5 per cent as a result of ETR. There is evidence to vouch that Germany and Denmark have achieved a strong double dividend.<sup>8</sup>

There is a room for scaling up and more extensive recycling for achieving stronger double dividends. Environmental taxes still make up a small portion of all tax revenues collected and distortionary taxes, such as labour taxes, dwarf environmental taxes at a rate of 400–1,000 per cent higher. This leaves room for further revenue recycling as well as scaling up the scope of ETR in the future, as the UK Green Fiscal Commission recently concluded.<sup>9</sup>

- **Increased employment:** Reducing taxes on labour will allow employers to invest in more jobs and more resource efficiency through improved productivity of their workers. High labour taxes can have a counter-effect on employment-generating policies, making employment of workers less cost effective than investment in robotic production systems, especially when prices of fossil fuels and energy are low. This is especially important in the Asia-Pacific region, where labour-intensive growth in production sectors is necessary for poverty reduction.

Experience in Europe, in particular in Germany where 86 per cent of the revenue from environmental taxes was allocated to compensate a reduction of direct contributions to social security from employers, there has been a steady increase in employment.<sup>10</sup> Increased employment in turn boosted consumption, which drove further economic growth. The sector that benefited the most in Germany was that of renewable energy, which experienced a significant boost in terms of investments and job creation. As of 2009, the renewable energy sector accounted for 300,000 jobs in the country, an 8 per cent increase from the previous year and 87 per cent higher than in 2004.<sup>11</sup>

An International Labour Organization study found that imposing a price on carbon emissions and recycling the revenue to social security funds to compensate the decrease in social security contributions (due to lowering labour costs) and investments in new green sectors would create 14.3 million net new jobs over a period of five years, which is equivalent to a 0.5 per cent rise in world employment.<sup>12</sup>

<sup>6</sup> Green Fiscal Commission, *Competitiveness and Environmental Tax Reform* (London, 2010), p.5.

<sup>7</sup> Noriko Fujiwara, Jorge Núñez and Christian Egenhofer, "The Political Economy of Environmental Taxation in European Countries", Centre for European Policy Studies Working Documents No. 245 (Brussels, 2006).

<sup>8</sup> National Environmental Research Institute, Cambridge Econometrics, Economic and Social Research Institute, Institute for Economics and Environmental Policy, Policy Studies Institute and Vienna Institute for International Economic Studies, *Competitiveness Effects of Environmental Tax Reforms, Final Report to the European Commission, DG Research and DG Taxation and Custom Union* (Roskilde, Denmark, 2007). Available from [www2.dmu.dk/cometr/COMETR\\_Summary\\_Report.pdf](http://www2.dmu.dk/cometr/COMETR_Summary_Report.pdf) (accessed 15 March 2012).

<sup>9</sup> Green Fiscal Commission, *The Case for Green Fiscal Reform: Final Report of the UK Green Fiscal Commission* (London, 2010).

<sup>10</sup> Employment impacts since 2005 should be understood as the results of the combination of ETR and ETS.

<sup>11</sup> According to interim results of an ongoing BMU research project.

<sup>12</sup> International Labour Organization, *World of Work Report 2009: The Global Jobs Crisis and Beyond* (Geneva, 2009), cited in United Nations Environment Programme, *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication – A Synthesis for Policy Makers* (Nairobi, 2011).

- **Developing a domestic green industry:** EFR and ETR provide a number of beneficial ways in which to engage the private sector in green growth and develop a new domestic green industry. A strong and consistent price signal on carbon allows private sector investment to consider green investments to be less risky, thereby allowing investment to flow from “brown” investments to “green” investments.

Recycling a portion of the tax revenues from ETR into energy efficiency investments and clean technology by the government can complement the strong price signal. These government investments can help develop a nascent green industry that may need large upfront investments to reach economies of scale; these large investments may be difficult to source from private investors. Together, ETR and EFR can develop the type of green industries seen in China, Denmark and Germany, as described in case studies in this chapter.

In addition, the increased commercial viability of clean technology and efficiency improvements can help redirect excess liquidity in the global market, regarded as a potentially destabilizing factor during the more recent financial crisis, into investments necessary for greening the economy. In this way, ETR/EFR can help to address problems in times of financial crisis.

### **Improving ecological quality (environmental dividend)**

Prices play a significant role in affecting people's behaviour. With a higher price on a good (energy), people tend to change their behaviour by reducing their consumption or switching to a more affordable alternative, or both. Taxes can be used to change the price and thereby change people's behaviour.

As currently configured, prices of resources do not reflect their growing scarcity, pollution and other social costs. By integrating these costs into the price via taxes, the right price signal of natural resources and ecological services can provide strong incentives to use less and increase the efficiency with which we use resources.

Putting a price on carbon also sends a strong price signal that increases the commercial viability of alternative energy sources thereby attracting private investors to shift energy investments towards renewable energy and away from fossil fuels. Shifting towards renewable energy can increase energy security and secure cleaner and healthier environments by reducing carbon emissions.

### **Challenges to achieving the double dividend**

- **Lack of supporting regulatory policy measures.**
- **Existing subsidies encouraging environmentally harmful consumption and production.**
- **Entrenched and locked-in unsustainable consumption and production patterns.**
- **Lack of well-developed and well-functioning labour and income tax system in developing countries.**

It is also necessary to underline that revenue neutrality principles may not and cannot always be realized; they are mostly applied to make ETR, EFR and subsidy reform measures widely accepted and supported by all parties.

### **Implementing strategies**

**Garner public acceptance and support:** Successful adoption of any policy will require a clear understanding of the local socio-political institutional context. For example, where do the political powerhouses reside and what are the country-specific drivers and processes of policy reformation? Which parties stand to lose and win the most from a new green tax initiative or subsidy reform? Building political coalitions and engaging relevant parties in the policy design phase will be crucial for overcoming many political obstacles.

**Choose the timing of a reform carefully:** Timing is a major factor in determining whether a policy will be adopted. Implementing ETR and EFR after an environmental or economic crisis might prove to be more politically feasible due to the public's greater awareness of the further consequences that could arise if the problems are not addressed. For instance, it wasn't until Ghana, which relies heavily on hydropower generation, experienced a

major power crisis after an extended drought, that policymakers there were able to rationalize increased energy prices to fund investments in non-hydro forms of energy production.<sup>13</sup> Policymakers in China capitalized on a period of low oil prices in 2008 to usher in fuel taxes.

**Blanket the public with information explaining the issues:** Garnering broad public acceptance for a new environmentally related fiscal instrument has generally been correlated to the level of awareness of the severity of the environmental problem being addressed by the policy and the effectiveness of the instrument to improve the problem. Polls in Europe and the United States have shown that 70 per cent of voters actually supported environmental tax reform after having it explained to them clearly.<sup>14</sup> This evidence lends weight to the importance of properly educating the public on the issues related to the policy through awareness campaigns well in advance.

Recycle the revenue into programmes and schemes that will enhance a sense of fairness in the policy. Concerns about fairness of the policy usually derives from the possible negative effects on international/sectoral competitiveness and the poor. Effectively articulating to the public who is responsible for the environmental problems (often the sectors affected by the new policy) and the specific measures (tax rebates, etc.) taken to prevent any unfair impacts can bode well for garnering greater public acceptance.

This is the approach undertaken in Indonesia in 2005 when a fuel subsidy reform was initiated to overcome the budget deficit and reduce spending of 20 per cent of the government budget on the subsidies. Public acceptance and support was stirred up by a programme directed to benefit poor households. In addition to reduced carbon emissions, the reform provided economic and social benefits as well. The fuel subsidy reform freed up US\$10 billion in 2006 alone, and US\$2.3 billion was used to support direct cash assistance for 19 million families, a low-income rice distribution programme, a programme for improved education for children and an increase of low-scale credit facilities.

Even though the earmarking of green tax revenue has usually been argued by many economists as inefficient, politicians have sometimes had to rely on at least short-term partial earmarking as a means for amassing political support for new green tax initiatives. Voters are concerned about how this new tax revenue will be used and don't want to see it wasted or fall prey to corruption. Partial earmarking thus offers policymakers a tool for achieving a balance between efficiency and public acceptance.

<sup>13</sup> Edward B Barbier, *A Global Green New Deal: Rethinking the Economic Recovery* (Cambridge, Cambridge University Press, 2010).

<sup>14</sup> David Malin Roodman, *The Natural Wealth of Nations* (New York, W.W. Norton & Company, 1998).