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Financing the Green Technological Transformation

Sustainable development requires a fundamental, global green technological transformation over the next 30 to 40 years. Otherwise, it will be impossible to simultaneously meet the goals of ending poverty and averting the catastrophic impacts of climate change and environmental degradation.

The ***World Economic and Social Survey 2011*** (**WESS 2011**) estimates that an additional $1.9 trillion (in 2010 prices) will need to be invested worldwide per year during 2011-2050. This annual cost will be equivalent to about 3 per cent of global output. More than half the increase, about $1.1 trillion, will need to be invested in developing countries. This requirement, while significant, is well within reach, even in developing countries, but will require strengthened international cooperation and scaling up of existing sustainable development financing.

Table
Mid-point estimates of incremental investment costs per annum, 2010-2050[a]

In billions of US dollars at 2010 prices					
	Energy supply	*Energy end-use*	*Adaptation to climate change*	*Agriculture and food security*	***Total***
Required *incremental* investment cost	1,000	800	105	22	**1,927**
Baseline incremental investment needs	1,400	1,000		200	**2,600**
Total incremental investment	**2,400**	**1,800**	**105**	**220**	**4,525**

Source: United Nations, *World Economic and Social Survey 2011: The Great Green Tehcnological Transformation*, (table VI.3, p. 174).

a Values are midpoint values of ranges of estimates.

What to invest in?

Economic transformation is not possible without investments in new economic activities embodying greener technologies. For developing countries, the challenge of transforming economies and of participating in green technological transformation should not involve a trade-off.

Global estimates of incremental investment requirements are calculated on the basis of assumptions regarding future trends in population, economic growth rates and required technological progress. The **WESS 2011** estimate is consistent across various sectors and objectives, instead of simply adding up unrelated investment estimates across sectors.

The overall estimate, in particular, assumes that climate change mitigation efforts, mainly consisting of the transition to clean energy, will be achieved in the best possible time, through retirement of the existing stock of "brown energy" sources and installation of clean energy sources in both developed and developing countries. This assumption dramatically reduces the estimated costs of climate change adaptation, suggesting that the total investment estimate is much less than what would otherwise be required, since delayed mitigation would increase adaptation costs by a factor of at least ten.

In the table, the row on baseline incremental needs includes the costs of sustaining the current level of services from various sectors, given expected economic and population growth rates, and is estimated at $2.6 trillion per annum.

At least half the estimated incremental investments for providing universal access to clean modern energy and for sustainable agriculture for food security would need to take place in developing countries. Developing countries will have a potentially bigger role in demonstration, deployment and diffusion, including the costs of building related infrastructure. In all, the incremental investment effort for developing countries is estimated at $1.1 trillion per year.

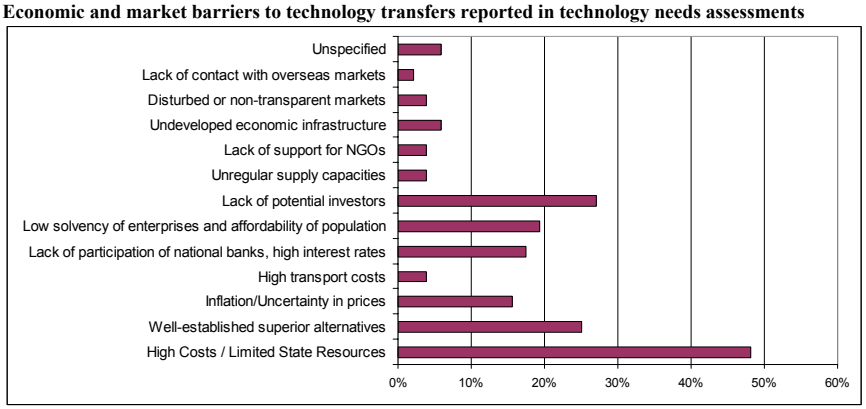
How to finance the required investments?

The mobilization of domestic resources will provide the bulk of resources needed in developing countries. In the particular case of foreign technologies, inadequate financing has been consistently identified by developing countries as the greatest obstacle to more rapid adoption (see figure). Relaxing financing constraints, both in domestic resource mobilization and access to foreign financing, is therefore critical. For developing countries particularly, internationally induced constraints on long-term financing of domestic investment for sustainable development need to be eliminated.

Less need for reserves will help domestic resource mobilization

In developing countries, enhanced domestic resource mobilization (private savings and public revenues) is critical for undertaking the required additional investment effort over the medium run. However, many developing countries have

Figure
Economic and market barriers to technology transfers reported in technology needs assessments



Source: UNFCCC, Subsidiary Body for Scientific and Technological Advice, Note by the Chair, 20 May 2008 (FCCC/SBSTA/2008/INF.2: figure 6).

poorly developed markets for long-term financing and weak fiscal capacities, limiting the scope for substantial increases in domestic funding for long-term investment.

Moreover, because of deficiencies in the global financial and payments system, a number of developing countries hold a significant portion of domestic savings as international reserves, which are largely invested in financial assets in developed countries. In doing so, developing countries make net transfers to advanced countries every year to the tune of $500 billion or more.

This pattern will need to be reversed if there is to be a net real transfer of resources to support developing countries to finance the greening of their economies. A reform of the global reserve system that would reduce their need to amass vast amounts of reserves to protect themselves against external shocks would help.

External transfer pledges and flows have been inadequate

Since the Rio Earth Summit in 1992, there have been many efforts to mobilize adequate finance for sustainable development. Specific commitments and pledges have been elicited under the banner of climate change. Because estimates of climate change financing requirements are more readily available, progress is more easily evaluated.

There has been a proliferation of pledged funding channeled through a plethora of financing mechanisms. So far, a total of $18 billion has been pledged, $2 billion delivered, and $734 million disbursed. At the United Nations Climate Change Conference in Copenhagen in 2009, developed countries pledged at least an additional $30 billion annually for 2010-2012 and $100 billion yearly by 2020 towards the costs of fighting climate change in poorer countries. In comparison to the estimated needs for climate change financing alone, the Copenhagen pledges represent no more than a fifth of current requirements and half the requirements from 2020.

The upcoming Rio+20 Conference, to be held in June 2012, will need to mobilize the international community to rise to the challenge and step up efforts to muster sufficient resources for sustainable development.The current proliferation of financing mechanisms has not resulted in adequate financing.

Existing mechanisms tend to be too project-oriented, making it difficult to align resource allocations with national sustainable development strategies. Thus, there is a need for better coordination and, where appropriate, consolidation of these mechanisms. Reforming financing modalities to permit greater control of project design and implementation by national authorities is also important.

Governance and accountability weaknesses that bedevil international development finance mechanisms will also have to be confronted in Rio+20. The successful Montreal Protocol, which dealt with protecting the planet's ozone layer, could provide a meaningful model for reforming other environmental funds. The Multilateral Fund for the Implementation of the Montreal Protocol provided compensation to developing countries for the cost of giving up the production and use of ozone-depleting substances. The Fund's Executive Committee has equal representation of seven industrialized and seven recipient countries elected annually by a meeting of the parties to the Protocol.

In conclusion, the three key messages are:

- First, at three percent of global output, the estimated incremental investment requirements for achieving sustainable development are not prohibitive.
- Second, developing countries will face important financing constraints which must be overcome. This will not only require full delivery on and further scaling up of pledges made at Copenhagen and elsewhere, but will also require much more effective international policy coordination to effect the real net financial transfers to developing countries.
- Third, it will require governance reforms of global environmental funds. ■

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