



A case study for sustainable development action using financial gradients

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ABSTRACT

Energy access is critical for sustainable development and therefore financing energy access is a necessity. The key is whether to focus on grants or public finance for sustainable development projects or move to a more diffused financing mechanism, involving investment grade financing sources like debt and equity. In other words, financing sustainable development action via grants is becoming a constraint. To address this constraint, it is important to consider the relationship between the nature and sources of financial flows. The concept of 'financial gradients' emerged while analysing the financial and business strategy developed for Lighting a Billion Lives (LaBL) campaign. This paper espouses the idea of 'financial gradients' which is a potential financial mechanism for sustainable development action. Financial gradients, can contribute in three different ways—first, as an approach to analyse financial flows in projects; second, as a tool to generate a single, long term and stable inflow of finance; third, as a financial mechanism to help in creating long term strategies to sustain projects. This paper will concentrate on financial gradients as a potential approach to analyse financial flows in a sustainable development programme.

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1. Introduction

Since the formulation of Agenda 21 (a global agenda for transition to sustainability in the 21st century agreed to at the 1992 Earth Summit (UNCED), at Rio de Janeiro) in 1992, adopting a development path based on the principles of sustainable development has become an aspiration for countries across the world. The concept of sustainable development is relevant in principle to all countries or societies, whether they are developing or developed. To achieve sustainable development goals, many countries have initiated strategies including programmes at local, regional, and national levels (Biermann, 2010).

Climate change is a phenomenon with pervasive and far-reaching social, economic, environmental, and political repercussions. The assessment by the Intergovernmental Panel on Climate Change (IPCC) and other analyses have brought forth the potential negative impacts for poverty alleviation efforts, which threaten to undo many of the development gains achieved in recent times. Climate change has the potential to undermine the existence of many of the world's poorest and most vulnerable people, who lack the financial, technical, human and institutional resources to adapt.

So far, the course of action across the globe has been a wide spread of both mitigation and adaptation strategies. However, much can be done to turn the challenge of climate change into opportunities for sustainable development. By promoting clean energy technologies and sound tropical forestry, we can involve the poor in an urgent global effort to mitigate greenhouse gas emissions, such that it leads to improved livelihoods, while reducing climate vulnerability (Fankhauser and Burton, 2011; Eriksen et al., 2011).

The paradigm of sustainable development reflects a consensual shift, from a singular focus on economic growth to a concept of socio-economic development, that is, "modified to take into account its ultimate dependence on the natural environment". After several decades of effort and thought, the concept has evolved to explicitly comprise three overwhelming concerns for human welfare—economic, social, and environmental—as well as the inter-dependencies and inter-linkages between them (Harvey and Pilgrim, 2011).

The current situation suggests that a major departure has to be made from the past pattern of development. It is also true, that for a developing country like India, promoting economic growth and development will continue to remain a primary goal. Therefore, it is crucial here to understand the need to achieve future development that is economically viable, socially equitable, environmentally sustainable, and most importantly, ethically acceptable (Heyd, 2010).

India's development goals are quite complex. With a considerable rural population, there is a greater need for programmes to

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address the synergy between sustainable development and climate change. Some of them include programmes for biodiversity protection, energy security, diversification of agriculture and rural livelihoods among many others. While there is an urgent need to adopt a multi-pronged strategy to prepare for sustainable development pathways—energy efficiency and mainstreaming of renewable sources into the country's energy mix are indispensable in order to achieve its developmental objectives. Energy access is critical for achieving our development objectives.

If all these programmes are to deliver the objectives of sustainable economic growth and social progress, it would require a large amount of financial support. Financial stability is a key challenge for the implementation of such programmes.

In the context of financial needs, a commitment of \$100 bn was agreed upon in the Copenhagen Accords for climate change adaptation and mitigation in developing countries. This sum is roughly equivalent to the total current global flows of Official Development Assistance (ODA). Climate change thus presents a significant additional challenge that requires resources equal to ODA. It is not as simple as just 'slotting in' climate finance obligations into ODA budgets.

Alongside the commitment to mobilise annual climate finance reaching \$100 billion per year by 2020, in the Copenhagen Accords developed countries also committed to collectively mobilise \$30 billion of 'Fast Start Finance' between 2010 and 2012 for adaptation in the most vulnerable countries and mitigation in emerging economies. This 'Fast Start Finance' was to be made up of existing ODA commitments and intended to cover the period of 3 years in which developed countries can agree and implement their 'new and additional' commitments to the \$100 billion per year (Burgess, 2011).

In the Indian context, the issue of climate change cannot however be taken up without linking it to developmental needs such as poverty, health, energy access and education. Estimates suggest that it will cost US\$130 billion simply to ensure that all Indian households enjoy access to electricity by 2030—a cost that would rise if this power were to come from clean fuel sources. Prof. Nicholas Stern has also acknowledged that adverse impacts of climate change on developing countries must be addressed through adaptation measures; that the costs of such measures are also significant and while developed countries do have a responsibility to provide the necessary resources for adaptation, it would be politically infeasible for them to go beyond the Monterrey ODA target of 0.7% GDP. Accordingly, ways must be found of "harmonising" climate change adaptation needs with accomplishments of the Millennium Development Goals (MDGs) with the same resources (Prasad and Kocher, 2009).

It is critical to understand that money alone cannot solve the problem. There are large risks associated. Uncertainties can be of various types, for instance, socio-economic uncertainty, e.g. development of different macroeconomic factors; policy uncertainty, e.g. about commitment to specific targets and stability of CO₂ prices; scientific uncertainty, e.g. about climate sensitivity, feedback effects, etc.; market uncertainty like fuel price volatility; technological uncertainty e.g. availability of renewable technology (Fuss et al., 2010).

We know that given the uncertainties and the scale of financing required, innovation is crucial. Therefore to address the problem, a trend to innovate financial options for sustainable development action has evolved known as 'Financial Gradients' (Bose, 2011).

There is a simple underlying argument in this paper. The problems faced for financing sustainable development action across the globe were also the problems faced by a programme for Energy Access using Renewable Energy (more details in the case study below). A financial gradient understanding was

developed during the analysis of the programme, which can be very helpful in three ways. First, as an approach to analyse financial flows in programmes or projects in the sustainable development space—it can come up with key financial indicators which can point towards the health of the programme or project. Financial gradients can also act as a tool by which individually volatile sources of finance can be combined together to generate a single long term and stable inflow of finance to fund a programme in sustainable development. Another way to describe Financial Gradients would be as a financial mechanism to help in creating long term strategies with the help of both business and financial models to sustain the programme or project. This paper will focus on financial gradients as an approach in a sustainable development programme.

2. Energy access using renewable energy¹ (Palit and Singh, 2011)

While renewables have significant potential in contributing to decrease in fossil fuel use and thus make a huge difference to energy security goals, they would also lead to a reduction in environmental impacts. It would also significantly improve livelihoods in rural areas where energy access has been a major hindrance towards the achievement of development goals. Conventionally, the role of renewables has been considered primarily for decentralised applications. The potential of solar thermal energy is very large, varying from megawatt level solar thermal power plants to domestic appliances such as solar cooker, solar water heater and PV lantern.

Lighting a Billion Lives (LaBL) campaign is an initiative by TERI that has evolved as an innovative renting model for providing access to clean lighting through solar lanterns. The campaign launched in the year 2008 aims to bring light into the lives of one billion rural people by displacing kerosene and paraffin lanterns with cleaner and efficient solar lighting devices, thereby facilitating education of children; providing better illumination and kerosene smoke-free indoor environment for women to do household chores; and providing opportunities for livelihoods both at the individual and at village level.

LaBL operates on fee-for-service or rental model wherein centralised Solar Charging Stations (SCS) are set up in villages for charging the lanterns which are provided daily on rent to households and enterprises. A typical solar lantern charging station consists of 50 solar lanterns with five solar panels and junction boxes. The charging stations are operated and managed by entrepreneurs belonging to the local community (Self Help Groups/individual youths) who qualify the selection criteria set as part of the LaBL campaign. These entrepreneurs are selected and provided handheld support by local LaBL implementation partners, each of whom is called a 'LaBL Partner Organisation' (LaBL-PO). The rent is collected by the entrepreneur, a part of which is used for O&M of the charging station and for replacement of battery as may be required after 18–24 months of operation.

So far, TERI has successfully extended the initiative in around 900 villages spanning 17 states in India, impacting more than 240,000 lives. Be it lighting or livelihood generation, the LaBL initiative has successfully demonstrated in India how solar lanterns could impact the community at both the household and village level. The impact of the initiative is not simply the provision of lighting purely in a physical sense, but it has turned to be an instrument which transforms lives and generates hopes and aspirations that clearly enhance human welfare substantially.

¹ TERI internal documents.

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