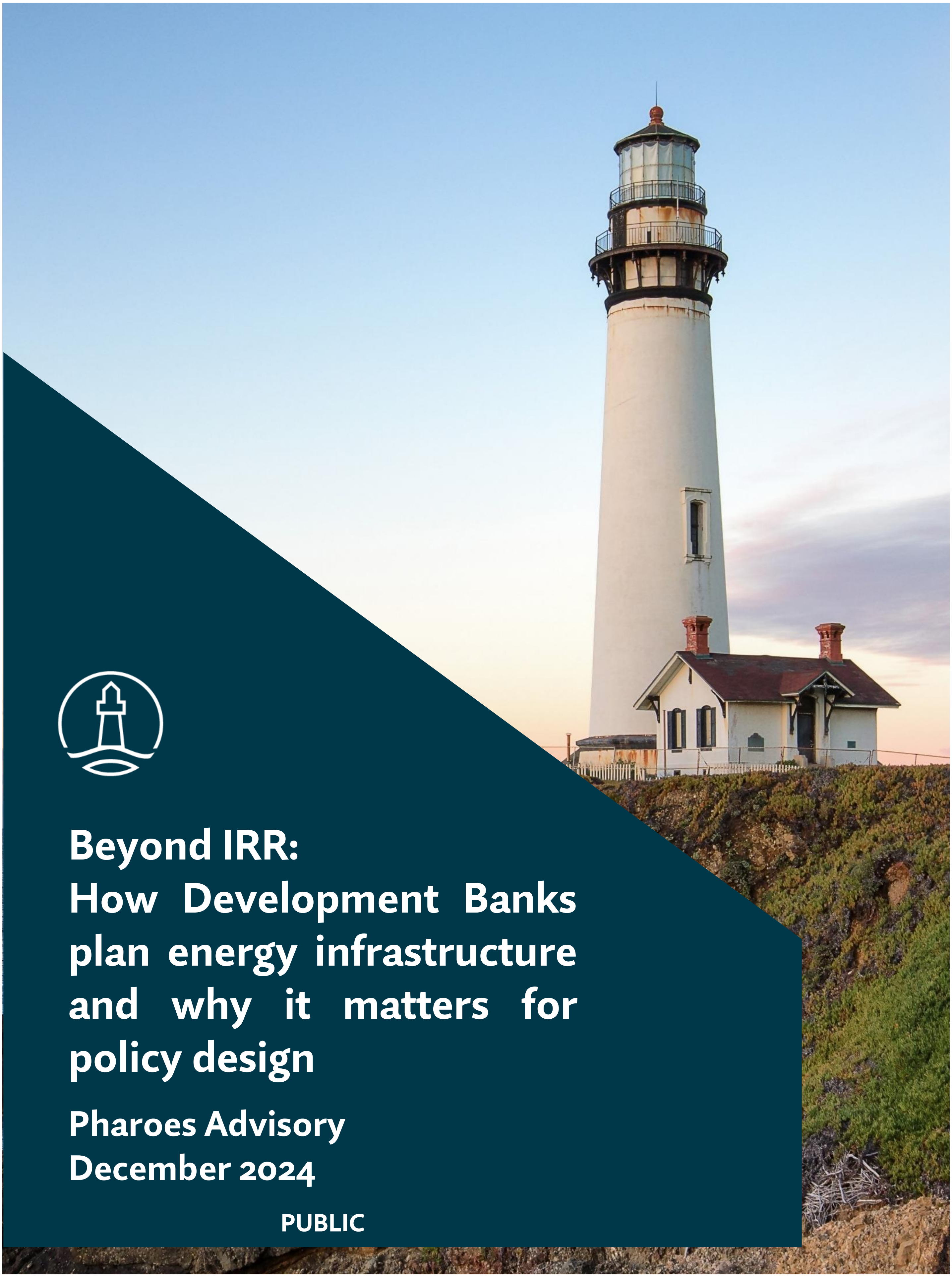


Beyond IRR: How Development Banks plan energy infrastructure and why it matters for policy design

Pharoes Advisory
December 2024

PUBLIC

Beyond IRR: How Development Banks plan energy infrastructure and why it matters for policy design

Executive summary

Energy infrastructure planning looks deceptively simple from the outside. Forecast demand, select technologies, estimate costs, and ensure the numbers add up. Yet anyone who has worked with the **World Bank**, the **Asian Development Bank (ADB)**, the **Inter-American Development Bank (IDB) or any other government agencies on public policy** quickly learns that their approach to planning bears little resemblance to the way a **financial investor** evaluates a project. This difference is not semantic or procedural; it is rooted in a fundamentally different understanding of what "value" means. Appreciating this distinction is essential for practitioners preparing studies, investment plans, or policy measures intended to meet MDB standards.

At the heart of the divergence lies a basic question. A financial investor asks whether a project is **bankable**: will the cash flows generated by the asset be sufficient, stable, and predictable enough to remunerate capital at an acceptable risk-adjusted rate? Development banks ask a different question: is this investment, or this policy, the **best use of scarce national resources** to advance a country's economic, social, and environmental objectives? The first is a question of private profitability; the second is one of **economic efficiency and social welfare**.

This distinction explains why MDBs insist on **economic analysis**, even when projects are ultimately delivered through private operators or public–private partnerships. Financial viability matters, but it is not the criterion by which development banks justify their involvement. Their mandate is not to maximize returns to equity or lenders, but to improve outcomes for society. In the energy sector, where networks, reliability, environmental externalities, and long asset lifetimes dominate, this difference becomes decisive.

Financial logic versus economic logic

Financial planning views the world through the lens of the project entity. Revenues are defined by tariffs or contracts, costs by capital expenditure, operating expenses, taxes, and financing terms. Risks are those that threaten cash flow: demand uncertainty, fuel prices, counterparty risk, regulatory instability. Performance is summarized in familiar indicators such as **IRR**, **NPV**, and debt service coverage ratios. This logic is coherent, but it is incomplete from a societal perspective.

Economic planning, by contrast, steps outside the balance sheet of the project company and looks at the entire economy. It asks how real resources are used and what real benefits are created. Payments between agents are not benefits in themselves; they are transfers. A subsidy paid by the government to a generator may improve the project's financial IRR, but economically it simply shifts resources from taxpayers to the project owner. Conversely, many of the most important effects of energy investments never appear in financial accounts at all. Improvements in **reliability**, reductions in **local pollution**, avoided **greenhouse gas emissions**, increased **productivity**, or enhanced **resilience** to climate shocks generate value for society that markets often fail to price.

This is why development banks systematically separate **financial analysis** from **economic analysis**. Financial analysis tests whether the project or implementing entity can operate sustainably, recover costs, and manage risks. Economic analysis tests whether the country is better off with the project than without it, once all relevant costs and benefits are considered. A project can fail one test and pass the other. Rural electrification schemes, for example, often struggle to achieve full cost recovery at socially acceptable tariffs, yet their economic benefits in terms of income, health, and education are substantial. Conversely, fossil fuel projects may be financially attractive while imposing large unpriced environmental and climate costs on society.

The discipline of "with versus without"

A defining feature of MDB-style economic analysis is its insistence on **incrementality**. Benefits and costs are never assessed in absolute terms, but always as the difference between outcomes **with the project** and **without the project**. This may sound obvious, yet it is one of the most common sources of error in infrastructure studies.

In energy planning, the "without" scenario is rarely a static world in which nothing happens. Demand grows, assets age, systems adapt, and alternative investments are made. Ignoring this dynamic baseline leads to overstated benefits and misleading conclusions. A new generation plant, for instance, does not create value simply by producing electricity; it creates value only to the extent that it supplies energy or reliability more efficiently than the alternatives the system would otherwise deploy. Those alternatives may include imports, demand-side management, storage, network reinforcements, or different generation technologies.

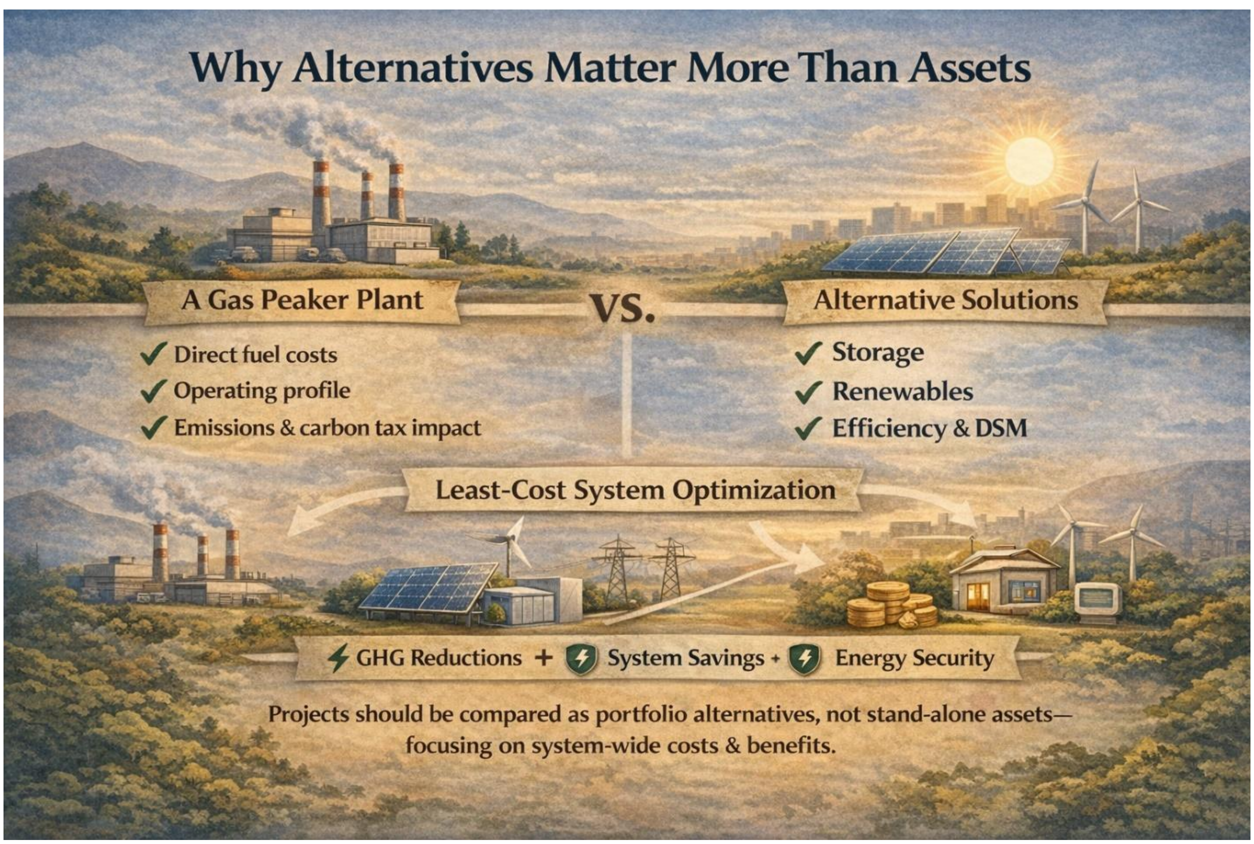
This incremental perspective forces planners to think in **system terms** rather than asset terms. It also explains why development banks place such emphasis on credible baselines and realistic counterfactuals. Poorly defined "without" scenarios undermine the entire economic case, no matter how sophisticated the modeling.

Why alternatives matter more than assets

Another defining characteristic of MDB planning is the centrality of **alternatives analysis**. Financial investors typically evaluate a specific proposal and ask whether it is financeable. Development banks start earlier and ask whether the proposed intervention is the **most efficient way** to achieve the desired objective. The objective itself may be reliability, access, flexibility, decarbonization, or affordability, but the principle remains the same: the chosen option must be demonstrably superior, in economic terms, to other feasible options.

In practice, this means that energy infrastructure planning under MDB standards is rarely about choosing a single technology in isolation. It is about comparing **portfolios of measures**. A transmission reinforcement competes economically not only with another line, but also with distributed generation, storage, demand response, or market design changes that reduce congestion. A peaking plant competes with flexibility options that deliver the same reliability at lower total system cost. When benefits cannot be fully monetized, planners are expected to demonstrate **cost-effectiveness**, showing that the selected option delivers the required outcome at least cost.

This approach naturally favors **least-cost system planning** and integrated analysis over siloed project appraisal. It also explains why MDBs are often skeptical of solutions presented as self-evident. The burden of proof lies not in showing that a project works, but that it is the best available use of resources under the given constraints.



Economic prices, not market prices

One of the most misunderstood aspects of economic analysis is the use of **economic prices**, often referred to as **shadow prices**. Markets, particularly in the energy sector, are frequently distorted by taxes, subsidies, regulated tariffs, monopolies, and externalities. As a result, observed prices do not always reflect the true opportunity cost of resources to society.

Economic analysis corrects for these distortions. Imported fuels and equipment are valued at their border prices, adjusted for transport and handling. Labor may be valued below the market wage in contexts of high unemployment, reflecting its lower opportunity cost. Foreign exchange may carry a premium in economies where it is scarce. These adjustments are not academic refinements; they can materially change project rankings, especially in capital-intensive, import-dependent energy investments.

For practitioners, the key point is not the mechanics of conversion factors, but the logic behind them. Development banks are less interested in what is paid than in what is **used up**. This resource-based view underpins all subsequent calculations of economic net present value and internal rate of return.

Climate externalities and the social cost of carbon

In recent years, the treatment of **greenhouse gas emissions** has moved from a peripheral concern to a central component of MDB energy appraisal. Development banks now routinely require the quantification of project-related emissions and, crucially, their integration into economic analysis.

The method follows the same incremental logic as all other benefits and costs. Planners estimate emissions trajectories with and without the project and calculate the net difference. This difference is then valued using a **social cost of carbon**, representing the present value of global damages caused by an additional ton of emissions. Unlike market carbon prices, which reflect policy choices and market design, the social cost of carbon is intended to capture underlying economic harm.

For energy planning, the implications are profound. Technologies that appear similar in private cost can diverge sharply in economic value once climate damages are internalized. Investments that enable renewable integration, reduce curtailment, or improve system flexibility gain additional economic justification. Conversely, high-emission options face an explicit penalty that reflects their long-term impact on global welfare.

Equally important is methodological discipline. Emissions benefits must not be double-counted, and climate valuation must be consistent across projects to allow meaningful comparison. This insistence on consistency is not bureaucratic rigidity; it is what allows development banks to allocate resources rationally across sectors and countries.

Risk, robustness, and long-term uncertainty

Energy assets last decades, and their value depends on uncertain futures. MDB-style appraisal therefore places strong emphasis on **risk analysis** and **robustness**, not merely on a single base case. Sensitivity analysis explores how results change with fuel prices, demand growth, technology costs, hydrology, or delays. The objective is not to predict the future precisely, but to test whether a project or policy remains economically justified under plausible adverse conditions.

This focus on robustness aligns naturally with policy design. Policies are rarely reversible at low cost, and their success depends on institutional capacity and political economy as much as on engineering. Economic analysis helps identify where risks are borne, who benefits, and which assumptions are critical. In doing so, it supports more resilient and credible decision-making.

Why this method is essential for energy policy design

Perhaps the most important insight for practitioners is that **energy policy design follows the same economic logic as infrastructure appraisal**. Tariff reforms, subsidy redesign, renewable support schemes, capacity mechanisms, and market reforms are not evaluated on the basis of financial returns to a project, but on their impact on social welfare. They change incentives, redistribute costs and benefits, and influence investment decisions across the system.

Using a purely financial lens to assess such measures is a category error. It obscures public goods, ignores externalities, and misrepresents trade-offs. Development banks therefore expect policy studies to articulate a clear **theory of change**, quantify incremental impacts, consider alternatives, and assess economic efficiency, distributional effects, and sustainability. Climate impacts are increasingly integral to this assessment, not an annex.

A different way of thinking about value

In the end, the difference between MDB-style energy planning and investor-style project evaluation is a difference in perspective. Financial planning asks whether capital will be repaid. Economic planning asks whether society is better off. For development banks, the second question is the reason the first matters.

For practitioners, adopting this mindset is not optional when working on policy advice. It shapes how problems are framed, how models are built, and how conclusions are justified. It explains why development banks sometimes support projects that appear marginally profitable, and why they sometimes reject projects that look commercially attractive. Above all, it clarifies why **economic planning**, not financial engineering, is the foundation of credible energy infrastructure strategies and sound energy policy.

Understanding this logic does more than improve compliance, it leads to better decisions in a sector where the consequences of mistakes are measured not just in dollars, but in reliability, equity, and the climate trajectory of entire economies.

PHAROES