Mainstreaming development imperatives into NAMAs: An approach

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Abstract

NAMAs (Nationally Appropriate Mitigation Actions) in developing countries are a political choice, given the complexity of issues involved at national as well as international level. There are political implications of which mitigation actions are reported as NAMAs, and which of the emerging categories of NAMAs (domestic, supported, credited, hybrid, mutually appropriate, sectoral etc) they are assigned to. These actions need to conform to countries' positions in climate negotiations, particularly on climate finance, technology transfer, capacity building and measurement, reporting and verification. They also need to ensure socio-political acceptability and economic viability in a national context of sustainable development. This paper offers a structured approach to making these decisions. Building on the review of climate negotiations, and national policies in developing countries along with stakeholder consultations, it develops an approach arranging a range of criteria clubbed under key desirable outcome clusters. Recognising that each criterion within an outcome cluster may have different significance for a country, and scoring against a criterion may involve multiple options, towards which countries may have different positions, the approach allows individual countries to reflect their weighting for each criterion within an outcome cluster and attitudes towards various options for a criterion. Accordingly, each outcome cluster gets positive and negative scores depending upon the specific project details. These scores are intended to assist the decision-makers in deliberating on and comparing various NAMA proposals, their eligibilities, acceptability and categories. Moreover, the negative scores also provide an indication how a proposal which is rejected can be revised and modified to achieve an appropriate scale and design.

Keywords: NAMAs, decision tool, multi-criteria, deliberation, co-benefits

1. Introduction

Mitigation in developing countries has always been a controversial issue in climate policy discourses broadly couched in the language of development versus environment and ethical distribution of responsibilities along the emission continuum (Mintzer & Leonard 1994; Grubb 1995; Tóth 1999; Bauer *et al.* 2008; Shrivastva & Goel 2010; Winkler 2010). The discourse has visibly gone through a transition with the general acceptance of the idea that the objectives of economic growth and development planning need to be situated within the framework of a transition to a low-carbon economy and the decision at COP-13 (COP = Conference of Parties) stating that developing countries will take 'nationally appropriate mitigation actions (NAMAs)' in the context of sustainable development and in line with support from developed countries (UNFCCC 2008). Recently, these two ideas have become inseparable, and NAMAs are increasingly being seen, and promoted, as a conceptual vehicle for this transition in developing countries (Shrivastava, 2013; UNEP, 2011a). In parallel, discussions on NAMAs have also gone through a considerable transition in both academic and policy circles. While it is widely recognised that varied national circumstances, including capabilities, would necessitate NAMAs being specifically identified, prioritised and designed for each country (Hänsel *et al.* 2013), there has emerged a variety of ideas about how NAMAs could be implemented (Linnér & Pahuja 2012). These discussions, along with developments at recent COPs, have virtually transformed the phrase 'nationally appropriate mitigation actions' from a politically condensed articulation of conditions under which developing countries may be willing to take mitigation actions to a mechanism by which mitigation actions in developing countries may be promoted.

The conceptual and institutional apparatus that the evolving discourse has produced so far includes a NAMA-registry and a range of categories of NAMAs broadly depending upon the financing mechanism of particular NAMAs. A prototype of a NAMA registry has already been set up.[1] The registry is expected to function not only as a NAMA database but also as a match-making platform for those who seek support and those who intend to provide it. The registry provides options for submitting NAMAs seeking international support and NAMAs seeking recognition. Subsequently, it will also have information on support for the preparation and implementation of NAMAs and information on supported NAMAs and associated support after matching has taken place.[2] Many countries have already submitted information while the debates are still underway.[3] Most of these NAMAs are at the concept and proposal stage, with few ready for implementation. Alongside, research community and other stakeholders have started identifying NAMAs in various sectors and countries (Agarwal 2012a; Tewari 2012; 2013; Tyler *et al.* 2013; Hänsel *et al.* 2013). In addition to the obvious categories of domestically supported and internationally supported NAMAs, other categories that have emerged include credited NAMAs, hybrid NAMAs, mutually appropriate mitigation actions (MAMAs), sectoral NAMAs, poverty-alleviating mitigation actions (PAMAs) etc (Sharma 2013; UNEP 2011a; UNFCCC 2013). Of course, these categories do have significant overlaps, and arguably are symptomatic of the ambiguities and uncertainties that surround NAMAs, both in terms of definition as well as the evolving institutional arrangements within and outside the UNFCCC (United Nations Framework Convention on Climate Change) framework.

From a developing country perspective, NAMAs are a political choice. What mitigation actions are reported as NAMAs, and which of the emerging categories of NAMAs they are assigned to, have political implications. These actions need to conform to countries' positions in climate negotiations, particularly on climate finance, technology transfer, capacity building and measurement, reporting and verification (MRV). They also need to ensure socio-political acceptability and economic viability in national context of sustainable development (Shrivastava 2010; 2012). The complexity and incompleteness of mechanisms under COP, particularly the NAMA registry (Tewari 2012) and the Green Climate Fund (GCF) (euractive.com 2013), along with the growing activity on the ground in many developing countries through bilateral initiatives – e.g. the Nordic Partnership Initiative on Upscaled Mitigation Actions (Laurikka & Leskela 2012) and the NAMA Facility by the governments of Germany and UK – broadly driven by the donor agencies' agendas (Hänsel *et al.* 2013), makes the choice of NAMAs very difficult at national level.

Speculation is rife that the governance of NAMAs would largely follow the institutional structure of the Clean Development Mechanism (CDM), where the role of the counterpart of the CDM Executive Board would be limited to maintaining the registry, and may also, perhaps, involve selection of NAMAs submitted by developing countries for support from the relevant international funding mechanism, including the GCF. To some extent, the evolving NAMA registry is performing the first task. However, it is still uncertain whether NAMAs would emerge as an international mechanism with clearly laid out negotiated guidelines or would largely remain a category where developing countries may report part or all of their mitigation actions as NAMAs. What is certain, however, is that the mitigation actions reported by developing coun-

tries as NAMAs would be subjected to some kind of MRV process. As of now, depending upon the type of NAMAs – i.e. domestically supported NAMAs (d-NAMAs) and internationally supported NAMAs (s-NAMAs) – MRV guidelines may be different wherein the d-NAMAs will be domestically MRVed according to international guidelines and s-NAMAs will be internationally MRVed (UNFCCC 2010). While these guidelines and rules are being negotiated, the issue of MRV is further complicated by the possibility that a mitigation action may have some components which are domestically supported while others receive international support. What MRV procedures would be applicable under these circumstances? Further, with respect to international support for NAMAs, whether there would be a dedicated centralised body deciding upon the allocation of financial support, or if it would be the responsibility of GCF, or left to the match-making role of the NAMA registry, is still to be resolved. With this ambiguity comes the uncertainty of the type and source of finance and associated political issues. With regard to technological support, the relationship between NAMAs and the Technology Executive Committee and Climate Technology Centre and Network is yet to emerge. Given institutional uncertainty at international level, alongside the increasing flow of bilateral support, it is important that developing countries are prepared with an institutional arrangement at the national level to streamline their negotiating interests with the mitigation actions, flow of support and various reporting requirements.

A government buy-in of any action labeled as a NAMA has been taken as a given requirement. Many reports and studies have suggested that the need for a designated national body for NAMAs is on the horizon. Such a body would require a framework for decision-making and streamlining the various concerns related to NAMAs. This paper offers a structured approach to making these decisions. The proposed approach could be used to design a NAMA or assess national appropriateness of mitigation actions. In the case of already developed proposals, the approach can not only help in assessing the degree to which a proposal is in the national interest, it can also be an instrument to find ways to improve the proposal. However, the most important use of the approach is at the stage of designing a NAMA. It is recommended that the approach is applied in an iterative fashion at that stage. There have been developed some insightful approaches which directly or indirectly relate to mitigation actions and policies (e.g. UNEP 2011b; Dubash *et al.* 2013). These approaches lay out important steps that should be followed in making choices, and also offer a set of criteria against which a proposed mitigation option should be scored. These approaches broadly follow multi-criteria methods and provide, very justifiably, scope for deliberation. However, these approaches also give considerable space for subjective scoring, which leaves room for transparency lapses in decision making. Further, the negotiation dynamics of NAMAs has been given little attention. The approach presented in this paper attempts to address these issues as well. It is important to mention here, however, that the presented approach has evolved almost simultaneously with, and hence is not a critique of, existing work. Instead, the overlaps are primarily due to similar concerns relating to mitigation and development imperative in policy-making, and divergences result from different entry points, and methodologies, to a similar problem. In that, this paper contributes to the existing body of literature to better understand, structure and think through the national and international agendas of development and mitigation.

2. Methodological steps

The entry point of this research is an exploration of the idea and meaning of 'national appropriateness' of mitigation actions. Given the diversity of ideas, we assumed that a NAMA may actually take many forms, from being a standalone project, to a large programme, to a policy and regulatory intervention (Linnér & Pahuja 2012; Sharma 2013), and may be owned or operated by private as well as public sector actors, with necessary government approval. Accordingly, it is also assumed that a national designated authority or an agency with approving authority will be a necessary institutional arrangement for implementing NAMAs (Linnér & Pahuja 2012). The authority may be decentralised depending upon the governance structure in a country. Nonetheless, this authority will make a choice, the appropriateness of which is to be established with reference to national context and goals.[4] Exploration of the normative aspects of the decision-making process with a given context and goal, therefore, forms the core conceptual exercise towards developing the approach and selection of criteria.

In this exercise, three parallel steps were followed: (a) a literature review; (b) stakeholder engagement through consultation workshops and a questionnaire survey; and (c) interpretation of existing NAMA proposals to unravel the underlying normative assumptions. A stakeholder consultation was organised in August 2011 in New Delhi to seek inputs and validate this methodological approach.[5] These three steps provided a range of criteria that are appealed to in adjudging appropriateness of an action in the context of national development priorities and climate change negotiations. Interim findings and discussions from

these three steps are published in the project research letter 'Mitigation talks' (Agarwal 2012a, b; Pahuja 2010; Tewari 2012; Shrivastava 2010, 2012). A roundtable was organised in New Delhi in November 2012 to discuss the draft synthesis of these findings.[6] The participants in the roundtable included policy makers, funding agencies and researchers. Based on the comments received in the roundtable, findings of the survey results (Pahuja & Agarwal 2013) along with the discussions during the various side events on NAMAs held during the COP 18 (Tewari 2013) and bilateral discussions with some of the members of the NAMA committee of India, the approach was revised into its present form, which at present is under review by international experts engaged with NAMA policy and implementation.

3. Normative guidelines for developing the approach

From the three methodological steps, the following six normative guidelines emerged as necessary in order to develop any approach and criteria to assess national appropriateness of a mitigation action:

3.1 Flexibility to country context

Mitigation in developing countries is a complex choice. Like any other environmental problem, it has a strong political undercurrent, and has multiple ways of constructing and solving the problem of rising GHG emissions (Bardwell 1991). Mitigation actions can range from purely policy to technological and behavioral or as combinations. A mitigation action entails more than a technical solution and requires a combination of social, economic, political, and institutional buy-in (Solomon & Hughey 2007). Therefore, a key question for developing countries relates to the complex choice of most 'appropriate' mitigation actions from the available options. But there are gaps in evaluation of climate policy instruments to select the most appropriate instruments (Konidari & Mavrakis 2007). Moreover, an instrument that works well in one country may not work well in another country with different social norms and institutions (IPCC 2007), which further makes choosing the most 'appropriate' action a complex process. Hence, a flexible, yet comprehensive evaluation framework is required.

3.2 A multi-criteria approach is unavoidable

Since any action is likely to have different implications depending upon the prevailing circumstances, it is extremely important that the process of making a choice is considerate of those circumstances. A comprehensive understanding of circumstances necessarily involves a number of factors. In a national policy context, these factors include concerns relating to different, often competing, national priorities; resource endowments; institutional, economic and physical infrastructure; terms of trade in global economy; social, cultural and political values; and so on. This implies that a choice in national context is necessarily a 'balancing exercise' between multiple concerns. Hence, for any action to be 'nationally appropriate' it needs to be justified against multiple criteria, separately as well as collectively.[7]

Different stakeholders expect a variety of outcomes from NAMAs, such as transformation of an economy (Linnér & Pahuja 2012; Escalante & Roeser 2013), co-benefits of development and economic growth (Pahuja & Agarwal 2013), sustainable development (Linnér & Pahuja 2012a) amongst others. Many also discuss the consideration of local capacities and institutional feasibilities while designing NAMAs. In general, while environmental problems are complex, involving a high level of uncertainty and being political in nature (Bardwell 1991), selection of appropriate mitigation options is a further complex problem (Ramanathan 1998). Many argue that there are different ways of constructing the problem and different paths to solving it. This necessitates the need to analyse different mitigation options to identify the most appropriate mitigation action. Such a choice involves a combination of technical social, economic, political, and institutional buy-in (Solomon & Hughey, 2007). While the choice of NAMAs is largely political, determined by the concerns in international negotiations, the implementation of actions is at domestic or local levels, which necessitates making the choice more inclusive and participatory.

We chose an approach which deals with decision-making problems under the presence of a number of decision criteria, both multi-objective decision-making (MODM) and multi-attribute decision making (MADM), as multi-criteria decision-making methods and tools (MCDM) are considered appropriate for capturing complexity of the problem and multiple perspectives of the environmental sustainability goal (Greening & Bernow 2004; Solomon & Hughey 2007; Wang *et al*. 2009; Konidari & Mavrakis 2007) and provide participatory analysis and qualitative assessment, along with a complete environmental and socio-economic impact assessment approach (Browne & Ryan 2010). MCDM helps with transparency by making key considerations explicit in policy-making process.

Literature on multi-criteria approaches suggests that a choice problem is generally a ranking problem among various choice options. Each option is assessed against a fixed set of criteria, particularly defined for a context, and the top-ranking option is deemed the most appropriate choice. It also suggests

that most of the multi-criteria models are a variation of the analytical hierarchy process (AHP). However, one of the major drawbacks of the AHP, which is extremely relevant in the context of NAMA design, is that it is not very suitable to situations which involve interdependencies among different criteria. In such situations, use of an analytical network process (ANP) is recommended. ANP is a generalisation of AHP, where hierarchies are replaced by networks that enable assessment of outcome of various dependencies and feedback relations between factors (Gasiea et.al. 2010; Saaty 2001).

Many studies have used different versions of the multi-criteria approach. The choice of indicators in each shows varying degree of overlap (see Table 1). For this study, in addition to a review of literature, stakeholder consultations and an online survey were used to identify independent criteria as well as define the independent criteria where there is possibility of interdependence.

3.3 Criteria must be measurable

In applying any criterion, the scale of measurement is crucial. In the context of NAMAs it is all the more important due to the concerns of MRV. It is not surprising, therefore, that the conceptual debate on the efficiency of application of AHP or ANP revolves around the use of a suitable scale to give scores to various options against different criteria. While different authors advocate use of different scales – linear, logarithmic, square root, verbal, geometric etc – there is unanimity that no single scale can entirely capture the complexity of choice parameters. Therefore, some also suggest using combination of scales (Ji & Jiang 2003). While the focus is on measurability, the criteria chosen also allow for some kind of qualitative matrix along with quantitative matrix given the complexity of criteria.

3.4 Discursive application of criteria

While the use of a multi-criteria approach is broadly recommended in either AHP or ANP format, some critical challenges remain in ascertaining accuracy and reliability in the outcome. The two most important challenges relate to the problems of 'rank reversal' and 'incommensurability of values'. The problem of

Table 1: Summary of studies analysing climate policy instruments using a multi-criteria approach

Study	*Objective/ Need for evaluation*	*Used sets of criteria*
Hoerner & Muller (1996)	Carbon taxes	Effectiveness, environmental incentive, administrability, fairness (actual and perceived) and revenue loss
Wu Zongxin & Wet Zhihong, (1997)	Mitigation assessment for China's energy sector	Mitigation potential, local environmental impacts, energy and resources efficiency, economic costs, consistency with national developmental goals, availability of resources, infrastructure requirements and capacity for localisation of manufacturing
Ramnathan (1999)	Selection of appropriate mitigation options	Cost-effectiveness, extent of reduction, local pollution benefit, other national benefit, adverse side effect, political and social feasibility, replicability, ease of implementation
Pearce & Howarth (2000)	Climate policy instruments	Causal, efficiency, equity, macro-economic and jurisdictional
Perrels (2000)	Finnish climate policy	Social cost, used potential, compliance risks, distribution effects and public/administrative cost
Government of New Zealand (2001)	New Zealand's climate change mitigation policies	Economic efficiency, equity, feasibility, environmental integrity and competitiveness
IPCC (2001)	Climate change mitigation policy options	Environmental effectiveness, cost-effectiveness, distributional considerations, administrative and political feasibility
Kete & Petkova (2001)	National case studies (Central and Eastern Europe), climate mitigation policies and measures	Environmental outcomes, economic/social outcomes, technical outcomes, institution building potential, project sustainability, dissemination/replication potential
Philibert & Pershing (2001)	Fixed, binding, dynamic, non-binding, sectoral targets, policies and measures for climate change mitigation policy	Environmental effectiveness, cost-effectiveness, contribution to economic growth and sustainable development, and equity
Smith & Sorrell (2001)	EU-ETS, national climate policy instruments (France, Germany, Netherlands, UK, Greece) and policy interactions	Environmental effectiveness, static economic efficiency, dynamic economic efficiency, administrative simplicity, equity, transparency and participation, political acceptability

Table 1 (continued)

Study	*Objective/ Need for evaluation*	*Used sets of criteria*
Johannsen (2002)	Danish agreements scheme on energy-efficiency in industry	Static concerns, dynamic concerns, institutional demands on the regulator and regulatee, political dimensions, risk.
Torvanger & Ringius (2002)	Burden-sharing rules in international climate policy	Responsibility, need, capacity, universal applicability and simplicity, easiness of making it operational, allowance for future refinements, allowance for flexibility and allowance of country-specific circumstances
Geoegopoulou *et al.* (2003)	Defining national priority for a NAP for GHG mitigation in energy sector for Greece and formulate a relevant time schedule for actions implementation	Cost of measure, contribution to fulfilment of the national emission reduction target, synergies with other actions related to the improvement of life quality, applicability, contribution to employment
Aldy *et al.* (2003)	Global climate policy architectures	Environmental outcome, dynamic efficiency, cost-effectiveness, equity, flexibility, in the presence of new information and incentives for participation and compliance
Governmental departments of Netherlands (1990), (2002), (2005)	Netherlands GHG mitigation policies; domestic climate policy instruments	Cost-effectiveness, equity, flexibility, transparency, efficiency, innovation, implementation according to schedule, certainty of the intended emission reductions, administrative costs, differentiated responsibilities
German BMU (2005)	Renewable Energy Sources Act	Ecological effectiveness, investment security, socially acceptable, cost-efficiency, administrative effort, openness
Ericsson Karin (2006)	Danish agreements scheme on energy-efficiency in industry	Competitiveness, cost-efficiency, side-effects (free riding), effectiveness, flexibility
Konidari & Mavrakis (2007)	Performance of EU emission trading scheme in 8 countries	Direct contribution to GHG emission reduction, Indirect environmental effects, cost-efficiency, dynamic cost-efficiency, competitiveness, equity, flexibility, stringency for non-compliance, implementation network capacity, administrative feasibility, financial feasibility
Solomon & Hughey (2007)	Evaluation of mitigation options from aviation sector	Environmental emissions, particulate emissions, noise, economic impact on GDP, competitiveness, economic distortion, cost-effectiveness, jobs and tourism, social-equity, distributional aspect, cultural, affordability and accessibility, institutional – political willingness, institutional feasibility, legal and statutory requirements, technological innovation
Wang *et al.* (2009)	Multi-criteria aid in decision-making	Efficiency, energy-efficiency, primary energy ratio, safety, reliability, maturity, investment cost, operation and maintenance, fuel cost, electric cost, net present value worth, payback period, service life, equivalent annual cost, emission of different gases, land use, noise, social acceptability, job creation, social benefits
Mundaca & Neij (2009)	Evaluation of tradable white certificate schemes	Energy-saving and environmental effectiveness, economic efficiency, cost-effectiveness, transaction costs, political feasibility, administrative burden, technical change
Grafakos *et al.* (2010)	Assessing policy interactions.	Climate: reduction in GHG emissions, increase in environmental awareness; energy: security of supply, reduction in energy intensity; financial: compliance costs, administration costs, transaction costs, governmental revenues; macro- economic: market competition, employment, competitiveness, business opportunities and trade; technological: innovation cycle, diffusion of existing technologies
Halsnaes & Garg (2011)	Assessing the role of energy in development and climate policies	Economic: cost-effectiveness, growth, employment, investments, energy sector; environmental: climate change air pollution, water, soil, waste, exhaustible resources, biodiversity; social: local participation, equity, poverty alleviation, education, health

'rank reversal' refers to the situation when a change in the order (not weighting) of a criterion results in change in the outcome (Saaty 2001). Clearly, this should not be the case while assessing 'national appropriateness' of an action. The problem of 'incommensurability of values' refers to the fact that not all relevant aspects can be measured against a single scale and therefore scores against various criteria cannot be aggregated into a single score (Martinez-Alier *et al.* 1998). Moreover, different people are likely to assign different scores to an option depending upon their perceptions and 'reasons to value' (O'Neill 2001). While the ANP approach does reduce the problem of 'rank reversal' to a considerable extent, the problem of incommensurability of values remains. As a solution, it has been suggested that while a multi-criteria approach should be deployed to have a fuller understanding of the choice problem, final decision should be made taking into account various qualitative factors as well as quantitative information on different criteria considered relevant (Martinez-Alier *et al.* 1998). Survey findings (Agarwal 2012a; Pahuja & Agarwal 2013) reveal that different stakeholders attribute different weighting to a particular criterion. For example, while consistency with national developmental goals and environmental performance are considered equally important by all stakeholders, 'co-benefits' and 'quantification of actual mitigation' are rated relatively higher by government and multilateral agencies, whereas private sector and not-for profit organizations give higher importance to 'ease of implementation' and 'economic efficiency' considerations. The responses of developed country respondents also differed from developing country respondents on many criteria.

The survey asked respondents to reflect on their perceptions on importance of different considerations while designing NAMA proposals to determine the weightings for each criterion. 'Consistency with national development goals' was considered the most important criterion in designing NAMAs, by both developed and developing country respondents. This reinforces the understanding that national circumstances are pertinent while designing NAMAs proposals and it is important to allow for flexibility in their design. 'Environmental performance of actions' and 'ability to measure and quantify emissions reductions achieved' were considered the next most important criteria, with developing country respondents considering the latter more important. This relates to lack of clarity with respect to what, how, when, and to what extent the action would be MRVed; and the fear is that MRV would be even more cumbersome for NAMAs as compared to the CDM. It is therefore important to have clear and simple guidelines on MRV for both domestically and internationally supported NAMAs. The developed country respondents, on the other hand, considered 'environmental performance' as more important, clearly indicating their emphasis on a result-based approach. At the same time,'ambition of level of actions' was considered the least important consideration while designing NAMAs by both developed and developing country respondents. This resonates with the idea that developed country Parties must take the lead and come up with higher levels of ambition. The results from each stakeholder group vary and corroborate the Arrow's impossibility theorem (http://gatton.uky.edu/Faculty/hoytw/751/articles/arrow.pdf). No decision-making tool can be designed that satisfies every decision maker or user. Therefore, given that the primary beneficiary of the proposed approach will be various stakeholders including developing country governments, private sector, funders, involved in designing/ approving NAMAs, the approach allows for flexibility in assigning the weights.

3.5 Political sensitivity of negotiations

Further, amidst a range of speculations, the NAMA registry under the UNFCCC has begun to take shape, many bilaterally supported mitigation concepts in developing countries outside the UNFCCC process are in the pipeline and many feasibility studies are in process. It is important to note that the bulk of NAMA activity is driven by bilateral support from developed countries largely in the form of ODA (Hänsel *et al.* 2013; Kuramochi *et al.* 2012), which from developing countries' point of view should not be accounted as climate finance. Moreover, the reasoning for most of these activities is that the experience from pilot actions is a better guide to design the governance structure of NAMAs. Arguably, this is creating a laboratory outside UNFCCC for a future climate regime in which developing countries are on the receiving end. It is therefore in the interest of developing countries that an objective approach exists, explicitly reflecting their negotiating interests, in judging under what conditions, any proposed mitigation action should be labelled as a NAMA.

3.6 Utility and ease of application

The strength of an approach lies in its utility for the maximum number of stakeholders and in ease of application. In the case of NAMAs, different stakeholders need evaluation frameworks at different stages and for different goals. While different aspects are taken care of by the use of a multi-criteria method, use of the approach at different stages, particularly *ex-ante* as well as *ex-post* evaluation needs to be inbuilt. In particular, the approach to evaluate NAMAs should

also serve as a background for developing a MRV framework. The ease of application can be best captured if the approach can be translated into a ready-to-use tool.

4. The proposed approach

The primary beneficiary of the proposed approach will be developing country governments. In addition to helping policy-makers select more 'appropriate' mitigation actions from a broad spectrum of choices, the proposed criteria can also help governments in classifying NAMAs.The emerging discourse on NAMAs indicates that NAMAs could be categorised in two different ways. One is according to the type of action (policy, programme or project) and the other is according to the source of support (domestic, international, mixed etc). These two types could be arranged in a matrix. It is likely that each combination in this matrix will have different political sensitivities attached to it, particularly with regard to MRV implications. The proposed criteria offer a structured approach to establish boundaries between domestic and supported NAMAs, to ensure synchronisation with national priorities to the maximum detail possible, and may also help in determining what mitigation actions over a period of time are possible in a country and why. Moreover, the proposed criteria could be applied in making *ex-ante* choices of mitigation actions and in *ex-post* evaluation of the performance of mitigation actions. It is, however, important to note that it is not an alternative to the normal policy process, but, rather, a tool to inform the policy process. A structured approach that clearly spells out national priorities and concerns will also serve as a guide for prospective NAMA developers (government agencies, private players, technical consultants). The criteria, if applied in the prescribed manner (see section 4), will be useful in determining the appropriate scope and scale at which an action becomes 'nationally appropriate'. The proposed approach arranges multiple social, economic and environmental concerns in a structured order. It will help funding agencies to assess a proposal with reference to their funding priorities. It may also be useful in streamlining various lines of funds dedicated to specific developmental objectives.

While developing the proposed approach, we began with a listing of key concerns, based on the review of climate negotiations, and national policies in developing countries, along with stakeholder consultations. We found that each NAMA is expected to have a set of desirable outcomes. These possible outcomes are clubbed into eight normative objectives – *the outcome clusters*. Each outcome is further translated into '*criteria*'. Recognizing that each criterion within an *outcome cluster* may have different significance for a country, the approach allows flexibility to users to assign weighting to each criterion within an outcome cluster, which essentially reflect national circumstances and priorities. Each criterion may have multiple *options* (see Annexure 1) for which different countries' attitude may be different. The approach allows the users to reflect their attitudes, reflecting the sensitivity to negotiating positions as well as political and socio-cultural acceptability conditions.

Users can assign *weightage* for each criterion within an *outcome cluster* along with *attitudes* towards various options: (acceptable (+1), indifference (0) and not-acceptable (-1)). A proposed NAMA is mapped against these options in terms of qualitative and/or quantitative scores, expressed numerically as per the scoring guide (see Annexure 1). These scores are aggregated for outcome clusters. Since it is advised not to reduce impacts of an action to a single score, but at the same time it is also recognised that some degree of aggregation is necessary for making the criteria accessible and useful, it is proposed that each outcome cluster is given two scores: one signifying the qualitative strength of positive impacts and other recognising negative impacts. This is achieved by aggregating the option scores as per the sign of attitude (positive or negative). Accordingly, each outcome cluster gets *positive* and *negative scores*, in a *'deliberation matrix'*. The 'deliberation matrix' of various NAMA proposals can be used to ascertain their eligibilities, acceptability and categories. Moreover, the negative scores also provide an indication of modification of NAMA design. It is important to note here that the user may add or delete more criteria and corresponding options within each outcome clusters. Figure 1 presents the general scheme of the approach.

4.1 Outcome clusters and criteria

(i) Political acceptability of international support

Mitigation in developing countries in the context of climate change has always been a politically contentious issue. Any discussion or opinion about NAMAs, therefore, can be insulated from reference to its international context. The two most important aspects are the international support (technology and finance) and MRV requirements. While it is a well-known position of developing countries that mitigation actions are dependent upon the international financial, technological and capacity building support, the need to scrutinise the package of support itself has also been pointed out, citing sovereignty and accountability concerns. For example, the source of support, or the channel through which support flows to developing countries and the conditions with which support is provided, needs to be carefully examined. A better way of doing this is to reflect upon it at the design

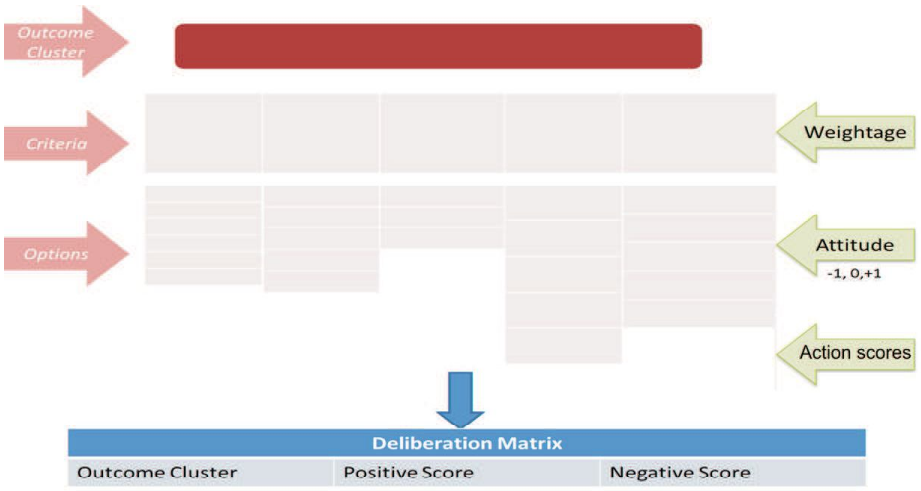

Figure 1: General scheme of the approach

stage of the action, mentioning the acceptable package of support. With reference to MRV requirements, transparency and an upfront statement of national circumstances and priorities that a proposed action caters to are imperative in any design criteria for NAMAs. Implicit in this is the requirement of measurability. Many studies (Ramnathan 1999; Sorrell 2001; Johannsen 2001; Solomon & Hughey 2007; Mundaca & Neij 2009) have considered political acceptability as a criterion to exert choice. However, choice of NAMAs would also have the elements of international political acceptability. Therefore, criteria such as finance, technology, capacity building and MRV are considered in the decision-making tool. However, the weightings, options and attitudes could be determined by each user.

(ii) Transformation of the economy

Although expressed through various concepts such as energy and resource efficiency (Zongxin & Zhihong 1997), sustainable development (Linnér and Pahuja 2012a), low-carbon economy and green growth (Shrivastava 2013) and so on, the underlying assumption has been that a NAMA should help the economy transform itself over a period of time into a more environment-friendly economic system bringing about transformational change (Escalante & Roeser 2013). This transformation may be brought about through technological changes, increases in private sector participation, changes in life-style, associated changes in manufacturing capability and shift in energy mix. It is also noted that such a transformation of the economy should not be at the cost of compromising national developmental priorities and overall environmental well-being. In other words, the transformation should be measured in terms of contribution to national developmental priorities, such as energy security, poverty alleviation, and enhanced manufacturing capabilities. These concerns may be further broken down into considerations of not only the immediate effects of the action but also the long-term effects (Escalante & Roeser, 2013). Hence, consideration of the 'time dimension' and 'second order effects' is integral to assessing contribution of an action towards transformation imperatives. Many studies have used similar criteria for exerting choice on climate policies, such as infrastructure requirements and capacity for localisation of manufacturing (Zongxin & Zhihong 1997), improvement of quality of time (Geoegopoulou 2003), technological innovation cycle and diffusion of existing technologies (Grafakos *et al.* 2010). However, each user may have a different perception of transformation, so the weightings, options and attitudes in the decision making tool could be determined by each user.

(iii) Social and cultural acceptability

The social dimension of the sustainable development agenda, along with acceptability among the local and political community, emerges from the discourse as one of the core priorities. Almost all studies evaluating climate policy instruments (see Table 1) use social acceptability as a criterion. In particular, reduction in economic and social inequalities, job creation and sensitivity to the cultural practices of local community are considered critical considerations.

(iv) Environmental consequences

The trade-off between mitigation benefits and other environmental benefits finds an increasing resonance in climate policy discourse. Mostly, other environmental benefits are articulated as co-benefits of climate

action, highlighting added advantages and hence justifying certain mitigation actions. However, it is also articulated in a reverse order, pointing out that mitigation actions should not be undertaken at the cost of other environmental considerations, like air quality, biodiversity, water quality, soil etc. Most of the earlier studies evaluating climate policy instrument (see Table 1) use environmental co-benefits as a criterion. However, articulation of each differs. The survey asked the respondents about their perception on what best describes 'environmental performance of actions' in the context of NAMAs. Direct contribution to GHG reduction (84%) was considered the best indicator of environmental performance, followed by 'environmental co-benefits' (70%). Surprisingly, 'Indirect contributions to GHG reduction' was considered less important, contrary to the increased emphasis on systemic transformational change (see for details Linnér & Pahuja (2012)) that NAMAs could bring about.

(v) Cost-effectiveness

Cost-effectiveness of an action emerges as one of the primary criteria in all the studies evaluating climate policy instruments (see Table 1). These considerations include cost implications not only for the project implementer but also for the regulatory agencies, government and the beneficiaries of the action.

(vi) Institutional feasibility

All actions take place within an institutional context. Therefore, in order for an action to be implemented it is a pre-requisite that it is a feasible action not only according to economic rationality but also in terms of institutional requirements.[8] Mostly, these concerns are expressed in terms of fulfillment of regulatory requirements, favorable legal and policy environment, environmental standards, safety measures and so on.

(vii) Domestic resource use

Efficient and optimum utilisation of, and greater reliance on, domestic resources are well established guiding principles of development planning. The discourses on low-carbon transition, energy security and sustainable development underscore this principle.

(viii) Reduction in undesirable impacts

Any action might have positive as well as negative impacts across multiple dimensions. As a general rule the positive impacts must be maximised and negative impacts should be minimised. While these concerns are expressed in positive as well as negative requirements, a generalisation of views expressed could be made so as to imply that as long as certain negative impacts are avoided an action could be considered appropriate. However, it might not be possible to eliminate all the negative impacts of a project. The choice, therefore, would be between two different combinations of negative impacts. Moreover, in different country contexts the list of negative impacts may be different. The negative impacts, over which very strong opinions emerged from discourse include (a) social and economic inequality should not increase; (b) no action described as NAMA should allow the economy to get locked into high-emission economic activities that cannot be closed down within economic rationality before a certain period of time; (c) a NAMA should not imply diversion of resources from other development activities; (d) conditionality of support should not infringe upon sovereignty; (e) balance of payment condition of a country should not be worsened; (f) the action should not lead to loss of livelihood of poor; (g) import dependence of an action should be as minimal as possible.

An illustrative list of possible criteria under each outcome cluster and a range of options that could be available to score against each criterion is given in Annexure 1 along with an illustrative guide of scoring against each option.

4.2 Scoring scheme

Since it is advised not to reduce impacts of an action to a single score, but at the same time it is also recognised that some degree of aggregation is necessary for making the criteria accessible and useful, we propose that each cluster is given two scores: one signifying the strength of positive impacts and other recognising negative impacts. The positive (or negative) score for an 'Outcome cluster' is calculated according to the following equation:

$$L^{+} = \Sigma_i[WC_i * \Sigma_{ij}(C_iP_j * SC_iP_j)^{+}]$$

Where,

L^{+} = positive score of Outcome cluster L

WC_i = Weight assigned to i^{th} criterion of Outcome cluster L

C_iP_j = 'attitude' given to j^{th} option of i^{th} criterion of Outcome cluster L

SC_iP_j = Score given to the proposed NAMA against j^{th} option of i^{th} criterion of Outcome cluster L

$\Sigma_{ij}(C_iP_j * SC_iP_j)^{+}$ = sum of the positive values

Similarly, the negative score for the cluster is to be calculated.

To illustrate, Table 2 shows how the scores for the Outcome cluster 'Political acceptability of international support' may be calculated in a hypothetical case. In this illustration, we assume that each criterion is equally important, and in order to ease the comparison between positive and negative scores we have

Table 2: Illustration of calculation of Outcome cluster scores for 'Political acceptability of international support'

Criteria [C]	*Weighting of criteria[a] [WCi s.t. ΣWCi=10]*	*Options* *Attitude[b] [CiPj]*	*Options [SCiPj]*	*Project score[c]*	*Guide for project score*	*Criteria positive score [CiPj*SCiPj]*	*Criteria negative score [CiPj*SCiPj]*	***Cluster score (+)***	***Cluster score (-)***
Type of finance	2	1	Grant	0.6	% of total investment	1.2	-0.8	**12.4**	**-5.6**
		0	Equity	0					
		1	Concessional loan	0					
		-1	Commercial loan	0.4					
		0	ODA	0					
		0	Philanthropic	0					
Nature of technology transfer	2	1	Concessional	0	Yes (1) /No (0)	2	-2		
		-1	Commercial	1					
		1	IPR license	1					
		1	Joint R&D	0					
		1	Knowledge	0					
Capacity building	2	1	Institution level	1	Yes (1) / No (0)	6	0		
		1	Systemic level	1					
		1	Individual level	1					
Source of finance (under/ outside FCCC)	2	1	GCF/UNFCCC	0.6	% of total investment	1.2	-0.8		
		-1	Multilateral financial inst- institutions/outside UNFCCC	0					
		-1	Bilateral funding/ODA	0					
		-1	Private investors/FDI	0.4					
		0	Individual/philanthropic	0					
MRV implications	2	-1	International MRV of all aspects of project	1	Yes (1) / No (0)	2	-2		
		1	International MRV of only supported component of project	0					
		1	Only domestic MRV	0					
		1	Part domestic, part international MRV	0					
		1	MRV of support	1					

Note:
a. Weighting within a cluster/decided by government/user
b. Acceptable (+1), Indifference (0), unacceptable (-1) decided by government/user
c. To be filled in by project developer, verified by DNA.

taken the weightings to add up to 10. Based on our assessment of climate change negotiations and positions generally taken by developing countries on various options listed in the table (grant as type of finance, concessional as one of the modes of technology transfer, etc) we have assigned 'attitudes' of an average developing country. For example, grant would be acceptable (+1) climate finance, whereas a commercial loan is most likely to be unacceptable (-1) to developing countries as climate finance. For all practical purposes, we assume that the weightage and attitudes are given *ex-ante* by the user, and how they arrive at them is beyond the scope of this paper. Accordingly, they may add more criteria and options. Now, suppose there is a candidate NAMA project in a super-critical power project involving a multinational company in collaboration with the public sector enterprise in India, Bharat Heavy Electricals Limited (BHEL). This project receives 60% as grant from the GCF and 40% comes in the form of foreign direct investment (FDI), to the effect that the multinational company owns the plant. The involvement of BHEL in the project is to build the boilers through a technology transfer agreement with Alstom on full commercial basis. The MRV requirements include a considerable part of how BHEL has implemented and benefited from the technology transfer agreement. These aspects are reflected in the project scores for options as per the scoring guide. It is very likely that the full commercial basis of the technology transfer agreement, FDI in power sector, and scope of MRV of BHEL functioning will be unacceptable for a range of policy and political reasons. The positive criteria scores are calculated by multiplying the sum of the project scores of the acceptable options by the weighting assigned to criteria. For example, 0.6 is the sum of the scores of acceptable options of type of finance, which, upon multiplication with weighting (i.e. 2), gives a positive criterion score of 1.2. Similarly, the negative criteria score is -0.8. Further, by summing up the positive and negative scores of each criterion we arrive as the positive and negative scores of the outcome cluster 'political acceptability of international support', i.e. 12.4 and -5.6 respectively.

4.3 Application of the criteria

It is important to keep in mind that the proposed criteria are not aimed at making final decision; rather the

purpose is to facilitate decision making in a more transparent and MRVable manner. The scoring scheme will give an 8 x 2 matrix as below. These scores are to be used for deliberation for making the final decision. Hence, we call the matrix below the 'deliberation matrix'.

The deliberation matrix

Cluster	*Positive score*	*Negative score*
Political acceptability of international support		
Transformation of economy		
Social and local acceptability		
Environmental consequences		
Cost-effectiveness		
Institutional feasibility		
Domestic resource use		
Reduction in undesirable impacts		

As mentioned earlier, the proposed criteria could be used to design a NAMA or assess national appropriateness of mitigation actions. In the case of already developed proposals, the application of criteria cannot only help in assessing the degree to which a proposal is in the national interest, but also be an instrument to find ways to improve the proposal. However, the most important use of the criteria is at the stage of designing a NAMA. It is recommended that the approach is applied in an iterative fashion while designing a NAMA.The purpose of iterations is, first, to eliminate the negative scores or reduce them to an acceptable level; and, secondly, to find an adequate financial, institutional and technological scale as well as scope under which an action is most appropriate.

This implies that, for the iterative process, if a proposed action does not attain acceptable scores against each cluster, corrective measures must be included as part of the proposed action and scores should be reworked. This would necessarily affect the scale and scope of the action. Moreover, if a fully internationally supported action does not meet the conditions of political acceptability, that action must not be undertaken. A schematic representation of how to apply the approach is given in Figure 2. Since iterations can go on for innumerable rounds and there is no clear rationale for the number of iterations an evaluation exercise should go through, we propose that a timeframe of assessing impacts of proposed action over a period of 15-20 years after iplementation should be considered.[9] Further, governments may choose to fix a minimum net score for each cluster for a project to be considered nationally appropriate, thereby incorporating a threshold for action into government policy.

To illustrate, let us take the example of fully domestically supported large hydropower projects in India. A likely deliberation matrix for the project is given in Table 3. For the sake of simplicity we have given descriptive scores with explanation.

Given the huge hydro potential and experience within India, it is expected that the project will have high positive scores for outcome clusters 'transformation of economy', 'institutional feasibility', 'domestic resource use', 'political acceptability of international support' and 'cost-effectiveness'. One may also reasonably expect mixed positive and negative scores for 'environmental consequences' and 'reduction in undesirable impacts'. However, experience has shown that large hydro projects in India have faced serious protests and hence, in their current form, will have high negative scores on 'social and local acceptability'. Any large hydropower project becoming NAMA as per the proposed scheme will have to reduce the high

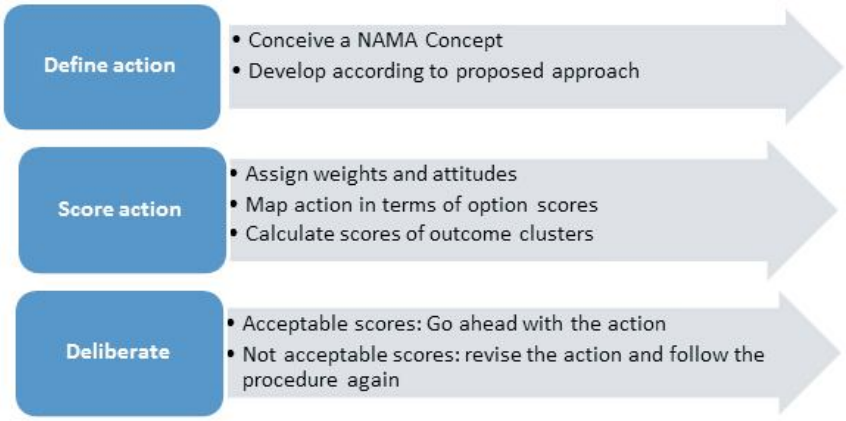

Figure 2: How to apply the NAMA design and approval approach

Table 3: Likely deliberation matrix for a large hydro power project in India

Cluster	*Positive score*	*Negative score*
Political acceptability of international support	High, since it is fully domestically funded	Low, assuming only domestic MRV and no judgment on ambition under ICA.
Transformation of economy	High, increased share of renewable energy and reduced dependence of imported exhaustive fossile fuels sources (energy security)	Low
Social and local acceptability	Medium, job creation, cultural acceptance of hydro-power, safe	High, displacement of marginalised sections and possible empoverishment
Environmental consequences	Medium, comparatively low GHG emissions, improved ground water table,	Medium /low, biodiversity implications
Cost-effectiveness	High, proven cheap power	Low/medium
Institutional feasibility	High, already in place	Low, already in place
Domestic resource use	High, domestic resources and technology	Low
Reduction in undesirable impacts	Medium. Reduced emissions and import dependence	High, livelihood losses and increased income disparity due to displacement, political unrest

negative scores on 'environmental consequences' (e.g. biodiversity loss), 'reduction in undesirable impacts' (e.g. political unrest), and 'social and local acceptability (e.g. proper relocation and resettlement of displaced communities). Obviously, this would have cost and scale implications, but at the same time would also improve positive scores on 'transformation of economy' (more equitable). These are the subjective choices a decision-maker will have to make while deliberating and revising a proposal for a large hydropower project.

Although in the case of large hydro projects in India the conclusion that a proper relocation and resettlement arrangement of displaced communities is the only way forward is already well understood, from the perspective of whether to label such a project as NAMA the proposed approach is useful. As is clear from the 'deliberation matrix', it helps in assessing the areas where negative scores are too high and need improvement. Further, at the second stage when increased costs are to be met with additional financial resources, whether it can be mobilised through domestic sources or through international funding, it helps make a decision depending upon the various criteria under the political acceptability of international support outcome-cluster. Hence, the iterative application of the proposed approach systematically helps in first harmonising a mitigation option with national developmental concerns and circumstances and then acceptability of international support.

5. Conclusion

In this paper we have proposed a systematic step by step approach to operationalise NAMAs from conception through implementation, from the perspective of bridging the national political context of decision-making, development imperatives, and their positions in global climate change negotiations. Although we have listed illustrative set of criteria, by allowing flexibility to users to prepare their list of criteria and include options as they emerge, along with making their weightings and attitudes explicit, we hope that a clearer communication among various stakeholders will help decision-making become more transparent and more attuned to various objectives that stakeholders pursue. For example, it may be the case that a project has different deliberation matrix scores for the governments and funding agencies but they both might find it acceptable and appropriate. In such a situation, the reasons will be clearer and the areas where improvement is needed are well documented in the project score sheet. However, it is important to make it clear that the proposed approach aims only at assisting the decision-making based on user's priorities and by no means prescribe any norms.

Notes

1. A publicly available full version of the registry was due to be uploaded in October 2013 on the UNFCCC platform. Updates on prototype registry could be accessed at: https://unfccc.int/cooperation_support/nama/items/7476.php.
2. More information can be found in UNFCCC (undated), available at http://unfccc.int/files/adaptation/application/pdf/info_note_on_the_registry.pdf.
3. Details can be accessed at https://unfccc.int/cooperation_support/nama/items/6945.php.
4. A very rich discussion on these lines is found in the debates on the literature on social choice. For a comprehensive summary and discussion see Sen (1982; 2002).

5. Minutes of the stakeholder consultation can be accessed at www.teriin.org/projects/nfa/pdf/NFA_NAMA_Stakeholder_Proceedings.pdf.
6. Minutes of the roundtable discussion can be accessed at www.teriin.org/projects/nfa/pdf/NFA_NAMA_Roundtable_Proceedings.pdf.
7. It is worth noting here that economist F.A. Hayek, in his critique of planning for a whole economy, pointed out that such an exercise would require undertaking an impossible task of gathering and synthesising enormous amounts of information.
8. There is a rich debate on the meaning and interpretation of the term 'rationality' and its application to economic decision making. Here we use it in the standard neo-classical sense of the term and not in the sense the critics such as Simon (1985), Sen (2002), Fine (2003) and some institutional economists refer to it. However, their concerns are embedded, we believe, in the multiple criteria and method to apply the criteria.
9. This time frame is loosely based on the work of Freeman and Perez on the pattern of changes in techno-economic paradigms (Perez 2004).

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Annexure 1: Outcome clusters, criteria, options and guide for proposal scoring (an illustrative list)

Criteria	*Options**
	Political acceptability of international support
Type of finance	Grant, equity, concessional loan, commercial loan, oda, philanthropic, private sector…
Nature of technology transfer	Concessional, commercial, IPR license, joint R&D, knowledge…
Capacity building	Institution level, systemic level, Individual level
Source of finance (under/outside FCCC)	Green climate fund/UNFCCC, multilateral financial, institutions/outside UNFCCC, bilateral funding/ODA, private investors/FDI, Individual/philanthropic
MRV implications	International MRV of all aspects of project, International MRV of only supported component of project, Only domestic MRV, part domestic, part international MRV, MRV of support
	Transformation of economy
Technological	Technology transfer agreement in case of imported technology, diffusion of domestically best available technology, enhancement in R&D infrastructure and/or domestic manufacturing capability, strengthening of national/sectoral innovation systems, market creation for new technologies
Private sector participation	Increased corporate social responsibility, leverages private finance, encourages private sector R&D, Voluntary initiative of private sector, public private partnership
Energy security	Increased exploitation of renewable energy, improvement in energy efficiency, reduced reliance on imported fuel, reduced demand for energy through behavioral change, reduced energy prices / improved access to energy
Impact on manufacturing capability	Addition to domestic manufacturing strength, domestic content of total input/raw material, improvement in competitiveness in international market, increased demand for domestic products (manufacture)
Lifestylechanges	Incentives for change in consumption patterns, Incentives for adoption of best practices, increased willingness to pay for environment friendly products, enhanced awareness
	Social and cultural acceptability
Reducing income disparity	Benefits for population below USD1 (PPP) per day, Proportion of employed people living below USD1 (PPP) per day,
Job creation	Nature (skilled, unskilled etc), type (permanent, temporary, seasonal etc.), reduces unemployment rate, no. of jobs per unit of investment
Impact on marginalised sections of society	Lower gender inequality, Increased resilience, improved social justice
Safeguards against risks	Health hazards adequately addressed, safety concerns adequately addressed, risk performance against (industry) benchmarks
Cultural acceptance	Involves a lifestyle change, Involves acceptance of a new paradigm/system/process, promotes change in attitudes
	Environmental impacts
GHG reduction potential	Increase in green cover (impact on sinks), Decrease in primary energy use (impact on sources), scale of impact (local, state, national)
Impact on air quality	No impact, increase in emissions of other GHGs i.e. GHGs not covered under KP (SPM/RSPM etc), Emissions of toxic air pollutants (acid rain, dioxins etc.),
Impact on biodiversity	No impact, ecosystem/biome spread (e.g. fragmentation, connectivity), abundance and distribution of species (diversity index), change in status (e.g. from threatened to protected etc)
Impact on water resources	No impact, water quality, availibility of water, local access to water, groundwater table
Waste management	Quantity of waste generated, type of waste generated, availibility of suitable waste disposal facilities, No impact

Criteria	*Options**
Impact on soil	Top soil (pollution/productivity), ground cover (erosion), salinization (from anthropogenic sources such as irrigation, fertiliser use etc)
	Cost-effectiveness
Cost of action	Investment per unit emission reduction, total cost per unit emission reduction, total cost per unit co-benefits accrued (whether the costs are lower than a pre-determined benchmark)
Cost of compliance	Costs incurred for meeting all the regulatory requirements within the project boundary per unit emission reduction achieved (whether the costs are lower than a pre-determined benchmark)
Cost to government	Costs incurred by the government in ensuring/enforcing compliance in terms of per unit of emission reduction or output (whether the costs are lower than a pre-determined benchmark)
Cost to beneficiaries	Reduce prices of goods and services, development of community assets or other tangible assets, ease of access of credit, introducing tax burden on beneficiaries
Cost recovery period /economic viability of the project	A positive economic NPV, a positive discounted net cash flow, cost of capital <IRR, duration of payback period
Resource (input) efficiency	Extraction of natural resources per unit of output, non-compliance with one or more than one laws and regulations applicable to the action
	Institutional feasibility
Compliance with existing laws and regulations	Compliance with all laws and regulations applicable to the action
Changes in institutional arrangement	Existing institutional structures are adequate for undertaking the action, action requires modifications within the existing institutional structure, Action requires establishment of new institutional arrangement
	Domestic resource component
Human resources	Action enhances the awareness levels of the local population, enhances the knowledge and expertise (skills) of the local population/leads to building green societies through green (job) training, enhances (provides) job opportunities for the local population, brings about a behavioural change in the local population (as a response mechanism to climate change), promotes good health and well-being of the local population, enhances economic prosperity and stability amongst the local population, enhances economic prosperity and stability amongst marginalised sections of the local population
Natural resource	Action enhances the natural resource base of the region, enhances the natural resource base of the region, promotes the use of locally available natural resources as raw materials/inputs for the mitigation actions, outsources/imports raw materials, etc. from other regions to protect/maintain the natural resource base of the region, outsources/imports raw materials, etc, from other regions to address the paucity of natural resources in the region, outsources/imports raw materials, etc. from other regions to achieve the desired efficiency levels of the employed technologies/processes (in the absence of required materials locally)
Financial capital	Actions strengthens the local financial market and institutions, promotes the use of local financial resources/inputs, promotes investment by external sources/parties
Technological capital	Action enhances the technological capital of the region by promoting/incentivising deployment and utilisation of new climate friendly technologies, enhances the technological capital of the region by promoting/incentivising innovation/development of new technologies, enhances the local technological capability of the region by promoting diffusion (commercialization) of certain technologies (through demonstration of the environmental effectiveness of the technologies/cost reduction), enhances the technological capital of the region by reducing/meeting the 'learning costs' of adoption of new technologies, i.e. the additional cost involved in adapting to the new technology, enhances the 'spill-overs', that is, transfer of the knowledge or the economic benefits of innovation/technology adoption amongst the potential users in the region
	Reduction in undesirable impacts
High emission lock-in	Duration of lock in compared to a pre-determined period: Scoring guide High (-1), Low (+1)
Import intensity	Share of imports to total input value: Scoring guide: increases (-1), declines (+1)
Impact on domestic manufacturers	Whether it puts domestic manufacturers out of business?: Scoring guide, yes (-1), no (+1)
Diversion of resources	Does the action needs government support that necessitates limiting support to MDG programs: Scoring guide, yes (-1), no (+1)
Livelihood losses	Does implementing the action leads loss of livelihood
Conditionality of support	Does the international support impose conditionalities other than MRV (e.g. IMF's structural adjustment program): Scoring guide, yes (-1), no (+1)
Hazardous waste	Does the action produces hazardous waste? : Scoring guide, yes (-1), no (+1)
Balance of payments	Does the action have potential to negatively affect balance of payments: Scoring guide, yes (-1), no (+1)

Note:
* The list of options is likely to keep evolving with policy, market and technology innovations. We propose these options to be scored as yes (1) and no (0) except for the outcome cluster "reduction in undesirable impacts". Particular users may define scoring differently, provided it maintains comparative consistency and sensitivity of scores)