



SD-PAMs: WHAT, WHERE, WHEN AND HOW?

Jane Ellis (OECD), Richard Baron and Barbara Buchner (IEA)
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FOREWORD

This document was prepared by the OECD and IEA Secretariats in Autumn 2007 in response to the Annex I Expert Group on the United Nations Framework Convention on Climate Change (UNFCCC). The Annex I Expert Group oversees development of analytical papers for the purpose of providing useful and timely input to the climate change negotiations. These papers may also be useful to national policy-makers and other decision-makers. In a collaborative effort, authors work with the Annex I Expert Group to develop these papers. However, the papers do not necessarily represent the views of the OECD or the IEA, nor are they intended to prejudge the views of countries participating in the Annex I Expert Group. Rather, they are Secretariat information papers intended to inform Member countries, as well as the UNFCCC audience.

The Annex I Parties or countries referred to in this document are those listed in Annex I of the UNFCCC (as amended at the 3rd Conference of the Parties in December 1997): Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, the European Community, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland, and United States of America. Korea and Mexico, as OECD member countries, also participate in the Annex I Expert Group. Where this document refers to “countries” or “governments”, it is also intended to include “regional economic organisations”, if appropriate.

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	5
1. INTRODUCTION	6
2. WHAT ARE SD-PAMS?	8
2.1 Definitions.....	8
2.2 Illustration of SD-PAMs	10
3. WHO WOULD PARTICIPATE IN SD-PAMS?	13
3.1 GHG context	13
3.2 Which countries are eligible?.....	15
4. HOW COULD SD-PAMS FIT IN A CLIMATE FRAMEWORK?	16
4.1 SD-PAMs generate credits.....	17
4.1.1 SD-PAMs generate “SD-PAM” credits.....	17
4.1.2 Interactions with the CDM	19
4.2 SD-PAMs do not generate credits.....	19
4.2.1 SD-PAMs as a stand-alone option for developing countries.....	20
4.2.2 Full integration of SD-PAMs in the climate regime: the Sao Paulo Proposal.....	20
4.3 Funding SD-PAMs.....	22
4.4 Concluding remarks on integration issues and incentives	23
5. SD-PAMS: PROCESS FOR IMPLEMENTATION UNDER THE UNFCCC.....	24
5.1 Identifying and preparing SD-PAMs	24
5.2 Submitting SD-PAMs	25
5.3 Financing process.....	26
5.4 Approval/registration process	26
5.5 Monitoring/reporting process.....	26
5.6 Review/evaluation process.....	27
6. CONCLUSIONS.....	29
REFERENCES	32
GLOSSARY	35

LIST OF TABLES

Table 1: GHG impacts of different types of policies and measures, and suggested eligibility (or not) for SD-PAMs	10
Table 2: Possible international requirements to register SD-PAMs	31

LIST OF FIGURES

Figure 1: Influence of the international benefits of SD-PAMs on the appropriate level of international oversight	6
Figure 2: Per capita energy use, energy-related CO ₂ emissions and GDP for selected countries and regions, 1990 and 2004*	15
Figure 3: Overlap between SD-PAMs, climate change policies and measures and the CDM	19
Figure 4: Overview of bodies and tools/decisions needed in implementing SD-PAMs	29

Executive Summary

All 191 Parties to the United Nations' Framework Convention on Climate Change (UNFCCC) have agreed to take measures to reduce their emissions of greenhouse gases (GHG). Specifically, under Article 4 of the UNFCCC, Parties have committed to “*formulate, implement, publish and regularly update national [...] programmes containing measures to mitigate climate change [...]*”.

The post-2012 climate framework is under discussion. The use of “sustainable development policies and measures” (SD-PAMs) has been proposed as a possible type of action or commitment for some developing countries in the post-2012 framework (Winkler et al 2002, South Africa 2006). This paper examines what SD-PAMs could encompass, how and where they could be implemented and how they could fit into a post-2012 climate regime¹.

There is significant interest in SD-PAMs as they could act as a “stepping stone” between countries with quantified emission limitation commitments and those without. Other potential advantages of SD-PAMs are that they could:

- promote climate-friendly action by countries at a unilateral, bilateral or multilateral level;
- officially engage non-Annex I countries in post-2012 mitigation activities;
- provide a framework for official recognition of domestic action in countries without GHG emission targets;
- facilitate/prioritise funding for undertaking such actions.

At this stage, the definition of SD-PAMs remains open. One proposed definition (Winkler et al. 2002) suggests that they should be domestically driven, could cover diverse approaches in many different sectors and have a development focus. Thus, SD-PAMs could include a large range of national or sectoral policies with a direct impact on GHG emissions such as increasing electrification rates, improving energy efficiency or encouraging re/afforestation activities. This definition could also encompass policies and measures with a more indirect climate benefit, such as increasing the availability of information/training on climate change or modifying urban planning procedures to reduce the negative impact of urban developments on local conditions and GHG emissions.

If the international community decides to include pledges by some countries to implement SD-PAMs in the post-2012 climate regime, it will need to define several key parameters. These include decisions on which countries would be eligible to focus their GHG-mitigation efforts on SD-PAMs and whether SD-PAMs could generate credits. They also include more technical decisions, such as which SD-PAMs could be recognised, and how they might be financed, monitored and reported on.

How SD-PAMs could fit into a climate framework

Depending on their definition, SD-PAMs could fit into a climate framework in different ways. This paper assesses three distinct options:

1. **SD-PAMs generate credits** which can be traded and used to offset (part of) emission commitments elsewhere. In such a case, SD-PAMs would not necessarily include the whole gamut of PAMs that help SD, as some of these policies have GHG impacts that are either indirect or difficult to quantify. Further, given the many diverse motivations for implementing SD-PAMs, it may be difficult to determine their additionality.

¹ For this paper, it has been assumed that the option to implement SD-PAMs instead of country-wide quantified commitments post-2012 is an option that would be likely to be open only to non-Annex I countries.

2. **SD-PAMs are encouraged by means other than credits**, such as in-kind support, facilitated access to funds, agreement that increased activity under SD-PAMs delays a country’s date of taking on a quantified emissions commitment.

3. **SD-PAMs generate recognition only**, such as, through some kind of registry that reports qualitative or quantitative information on SD-PAMs.

Whether or not SD-PAMs generate GHG credits would significantly change the incentives to undertake or support SD-PAMs. However, there would only be demand for the potentially large volume of any credits from SD-PAMs if other countries have stringent emission reduction targets. Some countries, both in Annex I and non-Annex I, have expressed reluctance to credit SD-PAMs.

Implementation issues

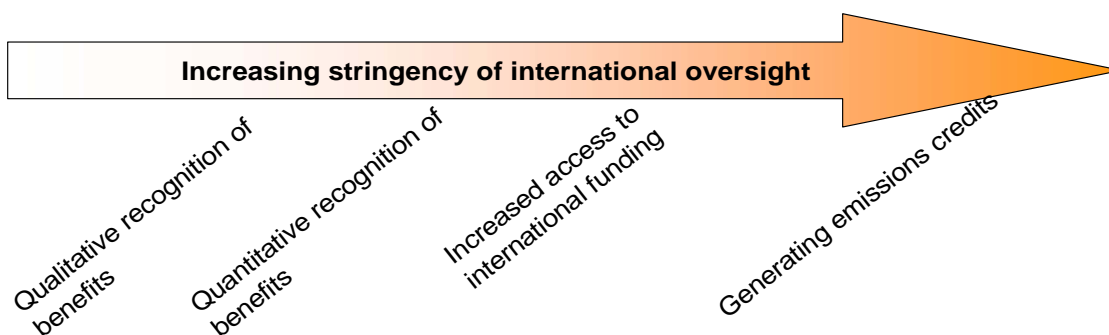
If SD-PAMs are part of the post-2012 climate regime, their implementation will need to be guided by an international framework. This framework could include:

- Guideline definitions or indications of what type of actions are eligible as a SD-PAM, and which countries are eligible to focus their GHG mitigation actions on implementing SD-PAMs.
- What the “international” role of SD-PAMs is in the climate regime (i.e. to generate emission credits, to generate quantified or qualitative recognition, to facilitate funding or an interim step towards further involvement).
- A process to identify, submit, approve, register, monitor, report, verify and evaluate SD-PAMs.

Lessons from other processes or bodies can be useful in this regard. For example, national or World Bank-related processes (e.g. the World Bank requires country assistance strategies prior to lending) to identify development priorities could also help to identify and prepare SD-PAMs. Institutions and processes developed under the CDM could also bring lessons on the level of international oversight needed for SD-PAMs. The monitoring and evaluation process could be similar to that used in the in-depth review of (Annex I) countries’ inventories and/or national communications. Some interpretations of UNFCCC articles 4 and 12 would allow SD-PAM implementation under the UNFCCC.

In general, the greater the incentives available for implementing SD-PAMs, the greater the required level of stringency of international oversight (Figure 1). A balance will be needed between the international benefits of SD-PAMs and how much oversight is desirable and feasible.

Figure 1: Influence of the international benefits of SD-PAMs on the appropriate level of international oversight



The purpose, funding levels, incentives and processes required to implement SD-PAMs are all linked. In order to reach an agreement on the role of SD-PAMs in a future greenhouse gas mitigation regime, agreement is first needed on what exactly SD-PAMs are, and what incentives are available to encourage them.

1. Introduction

All 191 Parties to the United Nations' Framework Convention on Climate Change (UNFCCC) have agreed to take measures to reduce their emissions of greenhouse gases (GHG). Specifically, under the UNFCCC Parties have committed to “*formulate, implement, publish and regularly update national ... programmes containing measures to mitigate climate change...*”. Many countries – both Annex I and non-Annex I – have indeed initiated significant national or local policies to mitigate emissions of greenhouse gases.

Under the Kyoto Protocol, the only explicit international recognition for non-Annex I countries' greenhouse gas (GHG) emission reductions occurs via the Clean Development Mechanism (CDM). However, the level and proportion of global GHG emissions from non-Annex I countries is rising. There are thus increasing calls for developing countries to participate more fully in GHG mitigation in a post-2012 climate regime.

The post-2012 climate framework – and in particular: who participates, how, when and to what extent – is under discussion. However, a “one size fits all” approach is unlikely to be chosen. Given the “common but differentiated” principle of responsibilities, as well as the large disparities between the level of economic development, energy use and GHG emissions between Annex I and non-Annex I countries, many developing countries have stated unwillingness to take on binding national-level GHG emission targets in the near-term. Winkler et al. (2002) suggests that some developing countries could commit to implementing “sustainable development policies and measures” that help to limit or reduce GHG emissions, and that these SD-PAMs could be quantified and reported in a post-2012 climate framework². Such SD-PAMs could operate at a sectoral or sub-sectoral level, and nationally (1 country) or internationally (several countries).

The recent IPCC report on the science of climate change indicates (IPCC 2007) that significant GHG emission reductions are necessary in the medium and long-term. A critical criterion for the introduction of new international instruments in the climate change regime is, of course, their ability to lead to actual GHG reductions. Whether SD-PAMs can deliver this is uncertain, as they have yet to be defined and implemented. However, there are many reasons to consider such measures for inclusion into a future climate regime. These include:

- Promoting GHG mitigation action by developing countries (on a unilateral, bilateral or multi-lateral level).
- Officially engaging non-Annex I countries in post-2012 mitigation activities.
- Providing a framework for the official recognition of actions in countries without quantified GHG emissions targets.
- Facilitating/prioritising funding for undertaking such actions.

This paper examines what “sustainable development policies and measures” (SD-PAMs) could be, and how they could be implemented and could fit into a post-2012 climate regime. This paper assumes that the option to implement SD-PAMs instead of quantified GHG emission commitments post-2012 is an option that would be likely to be only open to non-Annex I countries.

There are several key, but unanswered, questions related to SD-PAMs. These include policy-related issues such as which countries could take on commitments to implement SD-PAMs (rather than quantified emission commitments)? Why would particular countries decide to take on such commitments? They also include questions related to how SD-PAMs could be implemented. For

² Many other options for possible post-2012 GHG mitigation actions, including by non-Annex I countries, have also been proposed. However, this paper focuses solely on SD-PAMs.

example, what form of recognition would countries seek from taking such measures? Would financing through GHG credits be attached to SD-PAMs or – since SD-PAMs are “win-win” – should they exclude crediting? What is the benefit for the wider climate community of including SD-PAMs in a future climate regime? What are the possible downsides of this approach – is there a risk of lock-in for future climate policy? These implementation-related issues are examined in the remainder of this paper.

The remainder of this paper is organised as follows. Section 2 offers definitions and illustrations of SD-PAMs. Section 3 highlights the differing national energy, emissions and economic circumstances of different countries and the implications that this has for potential forms of post-2012 engagement in the climate regime. Section 4 examines how SD-PAMs could fit in a climate framework, while the process for possible implementation of SD-PAMs under the UNFCCC is explored in section 5. The last section offers concluding remarks.

2. What are SD-PAMs?

The notion of sustainable development policies and measures was first introduced by Winkler et al (2002). The aim of SD-PAMs is to encourage the development of policies that contribute to developing countries’ economic and social objectives, with the possibility to lower greenhouse gas emissions at the same time. SD-PAMs are not undertaken with GHG mitigation as their primary goal; rather GHG mitigation would come as a by-product – or co-benefit – of these policies. SD-PAMs would thus be developed as part of a country’s plan to develop in a more sustainable manner and also to reduce or limit growth in GHG emissions. A commitment on a SD-PAM would need to be accompanied by the definition of the policy “boundary”, within which emissions could be estimated or measured.

Many non-Annex I countries are already developing and implementing policies that reduce emissions of greenhouse gases as well as contributing to other national development objectives, such as reducing local air pollution and associated health impacts, increasing efficiency in industrial production, or increasing energy security. For example, China is actively promoting increased production of renewable electricity and has established several policies aiming to increase energy efficiency, albeit with mixed success (Li 2007). India has several policies in place to promote different forms and uses of renewable energy (MNRE not dated). Indonesia has developed policies aimed at reducing illegal logging (e.g. Republic of Indonesia, 2005). Arguably, such policies could qualify as SD-PAMs. In several instances, reducing GHG emissions is not even mentioned in the domestic legislation, while the effect on these emissions is clear (should the policies reach their stated objectives). The stated goal of such policies is therefore distinct from their actual impact, which can also be beneficial to GHG mitigation.

Without prejudging the effects of policies introduced to date, a crucial issue is whether future possible SD-PAMs would have a significant GHG mitigation effect, and thus whether embarking on an international negotiation of this instrument is justified. This section explores possible definitions for SD-PAMs, and provides illustrations of what types of policies could fit under a SD-PAMs framework.

2.1 Definitions

Winkler et al. provide an extensive definition of SD-PAMs, starting from overarching goals and considerations (2002, pp.62-67). These can be summarised by their:

- **Domestic-driven nature.** SD-PAMs start from development objectives and needs of the country, not from the search for GHG reduction opportunities³.

³ This notion is repeated in South Africa’s submission to the 2nd workshop of the Convention Dialogue: “Climate policy on its own will not solve the climate problem” (South Africa, 2006).

- **Diverse approaches.** Recognising that different development paths are possible, SD-PAMs should promote a more sustainable path to the identified objectives than that adopted so far, “either by tightening policy or implementing new measures.”
- **Development-focus.** Sustainability “means providing for [...] basic human needs”, which includes typically: “poverty eradication, job creation, food security, access to modern energy services, transport, drinking water, education, health services and land.”

Further, Winkler et al. (2002) also suggest a five-step process by which SD-PAMs are developed:

1. “Outline future development objectives where possible quantifying the expected benefits and possible risks. If a long-term vision has been articulated, backcasting to immediate action is possible. Otherwise, the country may outline shorter term goals.
2. Identify policies and measures that would make the development path more sustainable, primarily for reasons other than climate change. [...] These SD-PAMs may be the following: a.) existing sustainable development policy that is not fully implemented; or b.) new policies and / or more stringent measures.
3. Quantify the changes in GHG emissions of particular SD-PAMs, which should be reported in accordance with the Convention or other reporting provisions.
4. Compare the results from steps 2 and 3 to show which SD-PAMs create synergies between sustainable development objectives and climate change policy, and which conflict.
5. Summarize the net impact of a basket of SD-PAMs on development benefits and GHG emissions.”

Winkler et al. (ibid.) also mention the need to identify policies and measures that would increase GHG emissions from what would have happened otherwise.

Heller and Shukla (2003) also outline a possible participation of developing countries in GHG reduction via policy implementation. This suggests the need to broaden the scope of action with developing countries: “*Climate-related policies, then, are most likely to draw political support within developing countries when they piggyback on and enhance more salient development priorities. [...] This can serve to deescalate the debates over global burden sharing, reduce the perception that climate protection is a constraint on development, and increase the political salience of climate concerns among empowered development elites [...] A climate policy focused on inputs should seek opportunities to shift those fundamental drivers in climate-favoring directions.*” (p.126). As such, Heller and Shukla (2003) propose to put less emphasis on measuring precise GHG reductions and more on “building linkages with investors and mobilizing the political capital necessary to forge climate-friendly development pathways.” These “climate and development deals”, which in principle match the definition of SD-PAMs put forward by Winkler et al. (ibid), would depart further still from today’s main means of engaging developing countries in emission reductions via the project (or programme)-based, GHG-focused approach of the CDM.

If the international community decide to proceed with the SD-PAMs approach, a definition of what is eligible to be labelled as a SD-PAM will be needed. In theory, this could be complemented by a non-comprehensive “positive list” of potential PAM types. However, given the potential diversity of SD-PAMs, negotiating a comprehensive list of what could count as a SD-PAM and what could not is unlikely to be feasible.

Agreement will also be needed on whether countries can pick and choose which of their policies and measures they submit as “SD-PAMs” (i.e. whether countries can choose to only highlight policies that have a positive impact on GHG mitigation) or whether all policies influencing sustainable development, or sustainable development and climate change, need to be submitted (even if some of these policies

increase GHG emissions from the baseline scenario). These issues will all depend on whether implementing SD-PAMs implies qualitative or quantitative recognition, including GHG credits.

2.2 Illustration of SD-PAMs

A wide range of policies in the energy, agriculture, urban-planning, transport and industry sectors could fit the SD-PAMs description. However, not all policies that help a country to meet its sustainable development goals will decrease its GHG emissions (e.g. enhanced water supply and sanitation, an essential basic need for many regions of the world, generally implies increased energy use and associated GHG emissions). Further, while some policies and measures help to further sustainable development, they may have no GHG impact.

In that sense, not all policies and measures contributing to sustainable development would automatically be “eligible” for SD-PAMs. Similarly, there are several actions that can reduce GHG emissions alone without impacting a country’s other social, economic or non-GHG environmental development. Such actions could be defined as eligible as SD-PAMs (since reducing GHG emissions is one component of more sustainable development), or not. The GHG impacts of some different policy types, and potential eligibility of these policies as SD-PAMs are outlined in Table 1 below.

Table 1: GHG impacts of some different types of policies and measures, and suggested eligibility (or not) for SD-PAMs

Absolute GHG impact	Example policy/measure	Are the policies potentially eligible as SD-PAMs?
Direct GHG benefits, quantifiable	a) Promoting renewable energy use, increasing energy efficiency, re/afforestation programmes, sustainable agriculture	a) Yes – multiple and direct economic, social, local environmental benefits
	b) Reducing emissions of waste gases	b) Yes or No – depending on whether SD-PAMs are defined as PAMs that have other impacts as well as GHG emission reductions
Direct GHG benefits, difficult to quantify	Transport/urban planning; increased information or education on climate change and/or sustainable development	Yes, as can impact GHG emissions and SD directly
Indirect GHG benefits	Capacity building, developing SD legislation/ indicators, birth control policies*	Yes – direct impact on some SD goals; indirect link to GHG
No GHG impacts	Controlling local environmental issues (e.g. marine oil spills, radioactive waste disposal); improving healthcare, access to education etc	No, if no GHG impacts
Quantifiable GHG increases	a) Developing national fossil fuel reserves	a) Yes, if baseline scenario would be more GHG-intensive and less SD-friendly
	b) Acid rain control for coal-fired power, water supply and sanitation	b) No, if baseline scenario is less GHG-intensive

* NB, China includes a number for total population as one of its sustainable development goals (Gao 2006).

A common theme in many of the SD-PAMs examples found in the literature is that any associated GHG emission reductions are considered as a *change in* business-as-usual activities, rather than a *reduction from* BAU. This is well put by Heller (2006, p.40) in the idea of “development and climate deals”, which fits the description of SD-PAMs: “*Their objective is not to subsidize individual projects whose emissions*

are less than what business-as-usual might have produced, but to change the path of what is the usual business.”

Promoters of SD-PAMs have amply documented the types of policies and measures that could meet both sustainable development goals and achieve GHG emission reductions in so doing (e.g. Bradley and Baumert, 2005). These include policies to promote:

- **Energy efficiency policies.** Energy efficiency is now recognised as an efficient response to economic, energy security and environmental challenges. Such policies can take various forms, from minimum energy performance standards on appliances, vehicles, etc.; fiscal incentives for the adoption of efficient equipment and appliances; government procurement policies that encourage the improvement of energy efficiency through the acquisition of more efficient products; the removal of trade barriers to the imports of more energy-efficient appliances; labelling and other information systems, etc. For a discussion of such policies in the lighting sector, see IEA (2006a), Lefèvre et al. (2006). Ng and Schipper (2005) also present sustainable transport policies for China that also include targeted energy efficiency policy.
- **Other energy policies.** This can include rural electrification (see e.g. Dubash and Bradley (2005), who present various scenarios for the rural electrification of India). Fuel switch in electricity generation is also considered e.g. by Heller (2006) who assesses the GHG (and market reform) implications of substituting a 50 GW of coal-based electricity supply with gas-based generation – over and above the foreseen five-fold increase in China’s natural gas market by 2020 and estimates associated avoided CO₂ emissions as some 213 Mt CO₂ annually. Sustainable development benefits would include less land-use, less water use, lower local pollution levels.
- **In the forestry sector,** policies that would protect forested areas against deforestation can bring a range of local development benefits while, under certain circumstances, avoiding the release of CO₂ from carbon sinks (although quantifying avoided CO₂ emissions can be challenging). For example, Costa Rica and Mexico have established systems of so-called payment for environmental services (PES), the purpose of which is to “capture and market a number of [other than carbon storage] use values of forests, including watershed services, biodiversity, and landscape beauty in some places.” (Karousakis 2007, p.13). Similar forestry policies could be implemented, with or without international funding, and be potential candidates for SD-PAMs.

However, assessing which policies could be qualified as SD-PAMs, and which not, is not a straightforward exercise. This is illustrated in Box 1 below, using the example of different policies in China’s steel sector.

Box 1: Energy efficiency policies in the steel sector as SD-PAMs

Developing countries may adopt specific policies that encourage energy efficiency investments in heavy industry. Would such policies qualify as SD-PAMs?

There are several different types of policies that could increase energy efficiency in the iron and steel sector. For example, governments can encourage energy efficient investments via public investment in infrastructure, RD&D funding for research programs or technology deployment, regulatory instruments such as standards and mandates, and voluntary agreements between the private sector and the government.

Reduced energy use resulting from more efficient processes would generally contribute to sustainable development; benefits would include: reduced pressure on natural resources (energy), lower levels of local pollution, potential improvement on the energy security front, and more profitable (i.e. GDP-enhancing) production. Recent policy endeavours in this field include:

The closure of most inefficient industrial facilities in China, as per the 11th five-year plan. In a drive to curb the pressure on natural resources and the associated pollution, the government has decided to phase out 100 million tonnes of iron production capacity and 55 million tonnes of steel capacity by 2010. While the environmental and economic benefits of such policy are hardly questionable, the implications on jobs in regions most affected by the closures would be cast a more negative light on the sustainability of such a policy – were it to be submitted as SD-PAM.

Japan-China transfer of energy efficient technology. Japan financed the installation of a coke dry quenching technology (CDQ) in China's steel sector. CDQ allows energy conservation as it generates electricity; CO₂ emission reductions, prevention of air pollution (SO_x, dust, etc.), and reduces water usage. In the framework of this policy, Japan also provided follow-up programmes, going beyond the demonstration project (e.g. on-site seminars, operational advice, etc.)

The above example could be seen as mutual pledge for a SD-PAM, with one donor and recipient country. Note however that projects based on such technology could also be submitted as CDM projects (and by August 2007, 11 CDQ projects have been developed in China and submitted for validation. Combined, these projects expect to generate almost 2 million CDM credits per year.). This illustrates a recurring issue of instrument choice for developing countries, as they will face various incentives.

Source: Julia Reinaud, personal communication.

SD-PAMs could deliver significant levels of CO₂ (and other GHG) reductions. The quantification of any policy's contribution to GHG reductions is fraught with difficulty – especially when it is not primarily aimed at reducing emissions, and may impact economic development, access to new activities or expenditures that may lead to GHG emissions. The IEA World Energy Outlook (IEA, 2007b) quantifies the contribution of policies that aim primarily at improving energy security or reducing environmental impacts – including CO₂ emissions. Not all such policies may be “win-win”, nor may they necessarily qualify as SD-PAMs; some policies targeted to energy security would actually increase CO₂ emissions (e.g. the use of coal to produce liquids as substitutes to imported oil products). The WEO scenarios nonetheless provide an order of magnitude of energy-related CO₂ reductions that may be accessible with reasonable, security-enhancing energy policies. In developing countries, CO₂ reductions in 2030 would amount to more than 5 billion tonnes of CO₂ (the difference between the Reference Scenario and the Alternative Policy Scenario), with 3 billion tonnes avoided in power generation alone. Nevertheless, for developing countries, emissions in 2030 would remain some 7.2 billion tonnes, or 67% above 2005 levels in the Alternative Policy Scenario.

3. Who would participate in SD-PAMs?

The question of participation in SD-PAMs is twofold:

- Which countries would be deemed eligible to implement SD-PAMs instead of another form of GHG-related action or commitment?
- Are SD-PAMs unilateral or can they involve several Parties and actors?

This section outlines the global GHG context, and the changing role that countries are playing in this over time. It then explores whether SD-PAMs would involve one or more countries.

3.1 GHG context

Emissions of greenhouse gases (GHG) are continuing to increase. Indeed, the IPCC's 2007 report indicates that the scale of quantified emissions commitments of Annex I Parties and programmes, policies and measures undertaken by both Annex I and Non-Annex I Parties "*has not yet been large enough to counteract the global growth in emissions*" (IPCC 2007). Under the Kyoto Protocol (agreed in 1997), Annex I countries⁴ agreed to take on quantified emission limitation commitments to 2012 which would lead to a reduction in GHG emissions of just over 5% compared to 1990 levels if all countries ratified and complied. Non-Annex I countries have no quantified emission commitments under the Kyoto Protocol.

Ambitious climate change mitigation activities are needed in order to reverse the increasing trend in global GHG emissions. The importance of GHG emissions from non-Annex I countries is growing, with non-Annex I annual emissions from energy and industry projected to exceed Annex I emissions before 2025⁵.

Global trends in GHG emissions will therefore be increasingly influenced by emission trends in non-Annex I countries, particularly China and India. Participation of non-Annex I countries in GHG mitigation activities will thus need to be strengthened, even though their historical (cumulative) emissions will remain lower than those of Annex I countries for some time. There has also been rapid economic growth, as well as growth in energy use and GHG emissions, in several non-Annex I countries.

These developments are leading to increased pressure from some quarters for the more advanced, large emitters, in the developing world to commit to a greater level of participation in climate mitigation post-2012. However, there is no agreement as to what form such commitments should have, nor on which countries should undertake them. Further, many non-Annex I countries are resistant to taking on binding emissions commitments at this stage (GoC 2007, AOSIS 2007).

There are several different indicators which could be used to present the GHG and development context and growth of different countries. Definitions of which countries are big emitters, or which have large emission reduction potentials, or which can afford additional emission reduction costs will depend on

⁴ Annex I countries are: Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, the European Community, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland, and the United States of America. Australia, Turkey and the United States of America have not ratified the Kyoto Protocol. Both Australia and the US have emission commitments under the Protocol.

⁵ IEA (2006b). Given that several non-Annex I countries also have significant emissions from deforestation, total net annual GHG emissions from non-Annex I countries may have already exceeded those from Annex I countries.

which indicator is chosen. Figure 2 illustrates selected countries' values for four different, commonly-used, indicators⁶.

For example, in 2005 three of the top six emitting countries⁷ (on an annual basis) were non-Annex I countries: China, India and Brazil (IEA 2007a). Indeed, China is now estimated to be the world's largest emitter of GHG (IEA 2007b), emitting almost 7.5 billion t CO₂-eq compared to the US' 7.3 billion tonnes CO₂-eq. Further, by 2003, China and India were also in the top-10 emitting countries for energy-related emissions since 1850 (i.e. on a cumulative basis⁸, CAIT 2007). However, the cumulative energy-related emissions of the 10 largest non-Annex I countries between 1850-2003⁹ is less than 60% of cumulative emissions in the same time period from the US alone (CAIT 2007).

Although absolute emission levels from some non-Annex I countries are high, per capita values for GDP and energy use are often not¹⁰. Per capita GHG emissions in non-Annex I countries vary widely with, for example, 2005 per capita emissions in South Africa and Brazil more than four times the level of that in India. Figure 1 shows 2005 per capita values for energy use, GHG emissions¹¹ and GDP (based on purchasing power parities) for selected countries. Indeed, Qatar, Kuwait, Bahrain, Brunei Darussalam and the United Arab Emirates are the only non-Annex I countries whose 2005 levels of per capita GDP, energy use, energy-related CO₂ emissions and 6 GHG emissions all exceeded Annex I 1990 average levels¹², whereas China, India, South Africa and Mexico are the only non-Annex I countries that by 2003 have contributed more than 1% to cumulative anthropogenic emissions of energy-related CO₂ emissions since 1850 (CAIT 2007). If the post-2012 climate regime differentiates between different non-Annex I countries, it would be useful to examine how such a differentiation could be carried out. However, that analysis is beyond the scope of this paper.

Despite very rapid growth in recent years, by 2005 per capita emissions, per capita GDP and per capita energy use in China, India, and Brazil were still significantly lower than in Annex I countries in 1990 (Figure 1). On the other hand, some developing countries' performance in GHG per unit of GDP are high (excluding emissions from LULUCF emissions). Including these emissions in such a calculation is difficult because of lack of recent and comparable data. However, national data for Indonesia and Brazil indicate that including these emissions could quadruple values of per capita GHG emissions¹³. There are several reasons why a country's value of GHG/GDP can be high, including its resource base and industrial structure. Nevertheless, high values of GHG/GDP often indicate that some significant improvements are possible – more economic growth could be obtained with less CO₂. This is in part the logic of SD-PAMs: the pursuit of economic development with lower greenhouse gas emissions.

⁶ These were in part chosen because of data availability. Comparable information on countries' GHG emissions including deforestation for recent years was not available to the authors.

⁷ Emissions for all six gases, but excluding emissions from land-use, land-use change and forestry, and counting the EU25 as one emitter. Data for non-CO₂ gases are provisional.

⁸ Including CO₂-related emissions from energy from 1850-2003.

⁹ In descending order: China, India, South Africa, Mexico, Kazakhstan, Brazil, South Korea, Iran, Indonesia, Saudi Arabia.

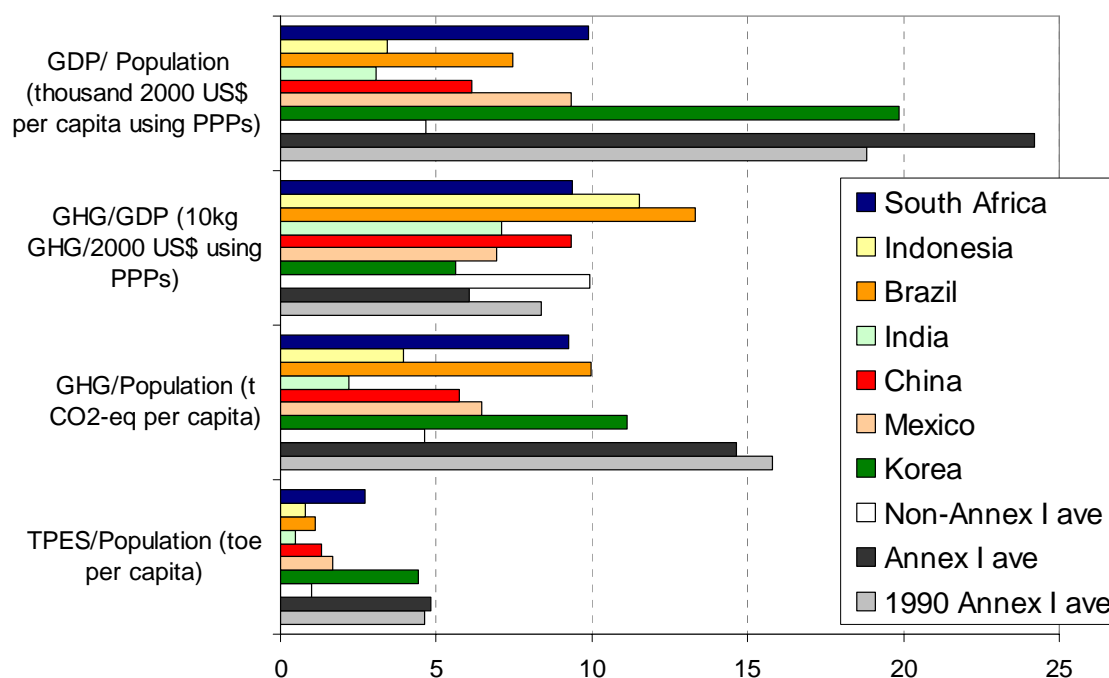
¹⁰ GDP per capita measures the relative wealth of people in different countries. TPES (total primary energy supply) per capita is an indication of the relative energy use and thus can be linked to development, and CO₂-eq per capita highlights differences in GHG emissions per person (the proportion of energy use in total GHG emissions varies widely between regions).

¹¹ Emissions of 6 GHG but excluding emissions from land-use change and forestry.

¹² 1990 was chosen because this is the base year for most Annex I countries. However, because of the break-up of the former Soviet Union, energy data for some Annex I countries is only available from 1992. 2005 represents the latest available data.

¹³ Data from the National Communications of Brazil and Indonesia both present data for 1994. Data for Brazil (GoB 2004) indicates that land-use change and forestry emissions accounted for 75% of the total, and the Indonesian report (GoI 1999) indicates that "land use change and forestry was responsible for more than 60% of the forcing in 1994".

Figure 2: Per capita energy use, GHG emissions (excluding LULUCF) and GDP for selected countries and regions, 2005 (and 1990 Annex I average)



Source: Calculated from IEA statistics

3.2 Which countries are eligible?

The type of international climate change commitment that different categories of countries may or should take is a topic for international negotiation, although objective analysis can help support an efficient and effective decision through the negotiations. The key question here is whether a focus on SD-PAMs (rather than on e.g. nationwide emissions or other commitments) is appropriate for some non-Annex I countries, all non-Annex I countries, or both Annex I and non-Annex I countries.

The majority of the literature focuses on developing countries' use of SD-PAMs. For example, Winkler et al. (2002) indicates that SD-PAMs would be for developing country participation. Bradley and Pershing (2005) indicate that SD-PAMs cannot "substitute for mitigation by developed countries", and should be targeted to less developed countries that cannot take on "explicit climate mitigation programs". Others have suggested that use of SD-PAMs rather than other forms of climate commitments should only be used by a sub-set of developing countries, e.g. the least developed countries. However, there is no agreement on what this sub-set should be. In other words, countries that cannot afford to divert resources for the sole purpose of reducing greenhouse gases may seek support for other policies that contribute to their sustainable development while reducing GHG. While all countries are clearly not equipped to take potentially costly measures with the sole purpose of reducing GHG, some developing countries may be advanced enough to engage actively in mitigation, particularly when there are substantial co-benefits of doing so. There is, however, no irrefutable method to select countries that would fit in the latter category and those that would be eligible for SD-PAMs – this is eventually about countries' willingness to pay for specific outcomes in a particular sector, i.e. a political and not merely a technical question¹⁴. The South African submission to the Convention Dialogue also implies that SD-PAMs could be used to stimulate further action on GHG mitigation by "developing countries" (although it also indicates that Annex I countries could also use SD-PAMs "as long as it is clear that these are no substitute for their quantified

¹⁴ This willingness to pay will vary within sectors as well as between countries.

emission reduction and limitation commitments”, South Africa 2006). Other analysis on post-2012 climate policy also focuses on SD-PAM use by non-Annex I countries (IISD 2007).

Whether or not SD-PAMs are unilateral actions is a question of a more institutional nature. A SD-PAM would engage one or more levels of government in one (or more) country. Each country is sovereign in establishing development goals and in implementing policies towards these goals. It should therefore be the responsibility of each Party that wishes to do so to submit a policy as SD-PAM to the UNFCCC. Whether this policy proposal might then be recognised by the UNFCCC Parties as contributing to both sustainable development and GHG reductions is addressed in Section 5.

There are thus various institutional forms that SD-PAMs could take. These are classified by Bradley and Pershing (2005) as either unilateral, mutual or harmonised pledges. Unilateral SD-PAMs would be financed and implemented by a single country. Mutual pledges would involve a donor and recipient country; the latter identifies a policy measure that it seeks to implement, while the former provides support of financial or in-kind nature towards the implementation of the measure. This form could be further modified to include the possibility of conditional pledges, i.e. for which support is sought, but not yet provided – implementation is conditional on assistance provided by other Parties or entities (GEF, international financial institutions, or the private sector). This is outlined in section 5.

Harmonised pledges could engage a group of countries with similar interest in implementing a given policy, either because its implementation is international (e.g. a power transmission line to improve the efficiency of a regional power system), or because joined action could enhance effectiveness. For instance, trade partners could also wish to coordinate policies so as to preserve a level playing field for a given competitive industry (Bradley and Pershing, 2005), and obtain recognition from the international community for their joined effort to achieve GHG mitigation. SD-PAMs could, in this case, be one official means to recognise so-called sectoral approaches that commit several countries to advance efforts in a given industry or group of industries.

4. How could SD-PAMs fit in a climate framework?

Annex I countries are the only countries to have emissions commitments under the Kyoto Protocol. At the time of agreeing the UNFCCC (1992), these countries represented OECD member countries together with countries from central and eastern Europe and some of the former Soviet Union undergoing transition to a market economy. No non-Annex I countries have quantified emission-related commitments under the Convention.

Since 1992, as outlined above, there have been a number of economic, environmental and other developments that might suggest differential treatment of non-Annex I countries in a post-2012 climate regime. A post-2012 climate regime could therefore establish different types of commitments (at least in the short-term) for different types of countries. For example, the participation of non-Annex I countries post-2012 could be differentiated in some manner.

In such a regime, SD-PAMs could form a “stepping stone” between the current non-Annex I status (the absence of country-wide GHG commitment) and some form of quantified, binding commitments. For example, it has been suggested that implementing SD-PAMs could be obligatory for newly industrialised countries, and obligatory (but co-funded) for rapidly industrialising developing countries (Höhne and Pershing 2006). Alternatively, SD-PAMs could be the focus for less developed countries¹⁵. Whether non-Annex I countries take on binding or non-binding commitments in a post-2012 climate regime, and if so, whether these relate to emission levels or policy actions, will depend on which criteria are chosen to differentiate between non-Annex I countries. The length of time for which a particular country’s GHG mitigation actions focus on e.g. the implementation/development/use of SD-PAMs could also vary. A

¹⁵ Ultimately, a political decision will be needed on which, if any, countries can focus their GHG mitigation efforts on SD-PAMs.

climate regime allowing the use of SD-PAMs will also need to include indications on how long such a decision is valid for and the criteria used to assess future participation via SD-PAMs.

SD-PAMs could fit into a climate framework in different ways, depending on how they are defined and which countries are eligible to use them. This section examines the possible role of SD-PAMs as a stepping stone between the absence of country commitments and some form thereof at a later stage. It then discusses incentives for participation based on three, distinct assumptions:

- SD-PAMs are designed to generate GHG credits (SD-PAM credits, or GHG credits).
- SD-PAMs cannot generate credits, but are encouraged by other means such as external sources of finance, in-kind support, agreement that increased activity under SD-PAMs delays a country's date of taking on a quantified emissions commitment.
- SD-PAMs and their effects are given international recognition, but are not otherwise encouraged via credits or other means.

4.1 SD-PAMs generate credits

This section explores one possible assumption for SD-PAMs, i.e. that Parties decide to allow direct crediting of sustainable development benefits and/or GHG reductions (and/or limitations) achieved by SD-PAMs¹⁶. This option is different from that of the role of CDM in countries that have pledged SD-PAMs, as crediting under the CDM would require the country and project participants to complete all the CDM-related steps necessary at a project (or programme) level before any crediting could occur.

4.1.1 SD-PAMs generate "SD-PAM" credits

There would, in theory, be two ways to quantify the benefits of SD-PAMs: the first focuses on estimated greenhouse gas reductions. The second would consider the positive sustainable development (SD) elements of the policy. There appears to be no universal and applicable metric for SD, unless one attempts to monetise the many possible benefits (e.g., how does access to public transport compare with reduced NO_x emissions? How would the SD benefits of increased energy access be compared with those of reduced groundwater contamination from landfill sites?) Presumably, SD-PAMs would be pursued in the country's interest, and their positive contribution can be monitored without relying on any complicated methodology for measuring these impacts.

This paper therefore explores the more straightforward option of greenhouse gas credits, referred to as "SD-PAM" credits to differentiate them from CDM credits. Another set of questions arise with the possibility to generate policy-based credits:

- **How to quantify emission reductions** stemming from possibly wide-ranging policies (from biofuels from ethanol, avoided deforestation to minimum energy performance standards for a set of electric appliances etc.). This issue has been analysed earlier by Bosi and Ellis (2005). One particular problem is linked to the myriad of factors that can affect a sector/territory's emissions (e.g. weather, economic growth, population growth), as well as the multiplicity of policies that may each work towards a single goal (e.g. encouraging renewable energy development via incentives, fiscal measures, targets, guaranteed electricity markets). This can lead to the potential

¹⁶ The original proposal for SD-PAMs, however, did not focus on the idea of crediting. Nevertheless, crediting SD-PAMs is one possible option for post-2012 so is assessed in this paper.

of double-counting of emission reductions¹⁷. Transboundary effects and allocation could also be important if several different countries participate in the same SD-PAM.

- **Whether to credit all emission reductions from a “win-win” policy.** The nature of SD-PAMs is that GHG reductions are a co-benefit of sustainable development choices, and not necessarily a primary goal. In such a case, should all generated reductions be credited, should the policy be assessed as non-additional (if it is introduced for another purpose)? Alternatively, what barriers to the implementation of a SD-PAM could be used to determine its additionality? Or should only a proportion of the policy’s emission reductions be eligible for crediting under the CDM (if so, how should this proportion be calculated)? Another issue is that of balance in the climate mitigation regime, if many developing countries have the opportunity to get credited for SD-PAMs resulting in an oversupply of credits. Such a system only works with stronger targets for potential buyers, i.e. Annex I Parties (Baron and Ellis, 2006).
- **The effect on countries’ willingness to accept nationwide emissions limitations.** For as long as policy-wide crediting is accepted under the UNFCCC, countries may be reluctant to take country-wide quantified emission commitments. This is because policy-wide crediting can generate revenue¹⁸, whereas quantified emission commitments could entail costs. It is also because policy-wide crediting could be designed whereby “positive” policies get credited while any “negative” policies do not get debited – whereas national commitments would not leave room for such a “pick and choose” approach.

Allowing SD-PAM activities to generate credits would increase the total “benefits” available for “SD-friendly” activities that also have a direct and quantifiable benefit on GHG emissions. These extra benefits could in theory help encourage increased deployment of GHG-friendly activities that have a high potential but are often not routinely implemented. Such activities could include activities that reduce emissions or increase uptake of or reduce emissions of CO₂ (rather than a higher-GWP gas), such as demand-side energy efficiency, small-scale renewable energy, small-scale re/afforestation activities and GHG-friendly transport developments¹⁹.

However, whether this theory is translated into practice will depend on how both SD-PAMs are defined, and how consistent (or not) this definition is between different countries. For example, different countries’ assessments of what helps achieve sustainable development vary widely under the CDM. They are therefore also likely to vary under a SD-PAMs approach, unless international agreement can be found on a suitable metric for sustainable development²⁰. Any agreement to move forward with SD-PAMs may therefore encourage activities in areas other than those currently thought of as good candidates for SD-PAMs (such as those outlined above).

¹⁷ It may also be that policies within a particular country have “competing” goals. These could include goals to increase fossil fuel electricity generation and to increase renewable electricity; or policies that lead to increased car use as well as policies that reduce emissions from cars. In such cases, would the combined effect of all policies in a sector be assessed for crediting, or only the policy that leads to emission reductions? If GHG-friendly policies can generate credits, and GHG-intensive policies do not generate “debits”, reporting on SD-PAMs will not accurately reflect the impact of a country’s actions on GHG emissions. Winkler et al.’s proposal (2002) is for a more encompassing approach whereby the net effect of policies within a sector would be evaluated.

¹⁸ Either directly, e.g. under a SD-PAMs crediting approach, or indirectly, e.g. via activities implemented under a SD-PAM and registered as a CDM project activity or programme of activities.

¹⁹ Developments under the CDM could also allow crediting for activities of such types. See discussion in section 3.5.

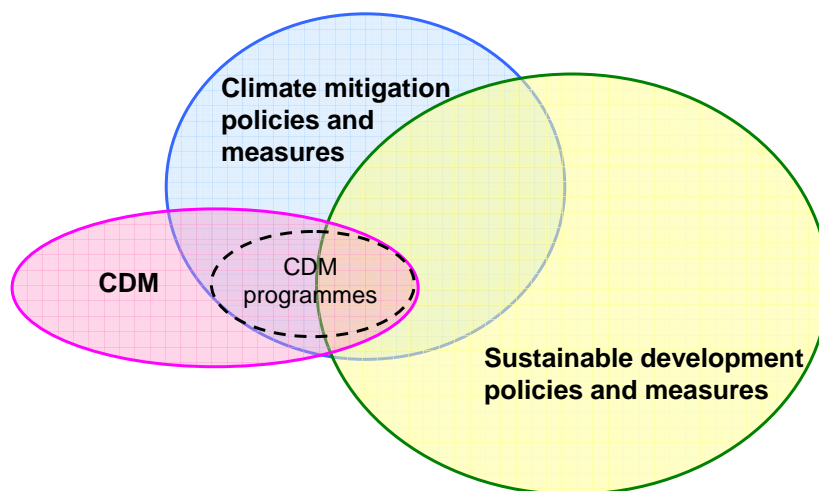
²⁰ The UN Commission on Sustainable Development has a set of 50 “core indicators” for sustainable development (UNCSD 2007).

4.1.2 Interactions with the CDM

The Clean Development Mechanism (CDM) was established by the Kyoto Protocol, and aims to help promote sustainable development in non-Annex I countries while helping Annex I countries to meet their emission commitments. The framework of the CDM was laid out in decisions from the 7th Conference of the Parties (COP7, in 2001). It has been in constant development since, with decisions on various aspects of the CDM being taken at every subsequent COP. CDM developments are also due to the “bottom-up” nature of the CDM, which enables many decisions to be made by the CDM Executive Board that meets several times a year.

There is likely to be some potential overlap between policies classified as SD-PAMs, and activities that can generate credits under the CDM (Figure 2). This is because some GHG-mitigation activities that implement local, national, or international policies and measures are eligible for crediting under the CDM²¹. The area of overlap is focused on policies and measures which have direct, quantifiable GHG impacts (outlined in Table 1). These include policies and measures that reduce GHG emissions or increase GHG sinks as well as those that increase GHG emissions (but at a lower rate that would have happened otherwise). Examples of such policies include measures to increase the deployment of renewable energy sources or energy-efficient technologies or re/afforestation programmes. To generate credits under the CDM, the emission reductions achieved by activities implemented under these SD policies and measures would need to pass the CDM additionality test (as well as all other steps necessary for CDM registration). As highlighted above, it will not necessarily be straightforward to assess additionality for a policy and measure – particularly one that has several co-benefits.

Figure 3: Overlap between SD-PAMs, climate change policies and measures and the CDM



Source: authors

4.2 SD-PAMs do not generate credits

Not allowing policies and measures implemented under SD-PAMs to generate credits (including under the CDM) would be consistent with several developing-country views (e.g. BASIC 2006, South Africa 2006) that SD-PAMs should be recognised as a contribution to global mitigation of GHG emissions - rather than as a credit-generation mechanism. It would also reflect other considerations, including that

²¹ The decision to allow “programmes of activities” to become eligible under the CDM was taken at COP/MOP1 in December 2005. Subsequent EB guidance (e.g. at EB32) indicated how this decision was to be interpreted: programmes of activities that implement government policies (including mandatory policies in some cases) are eligible to generate credits under the CDM.

SD-PAMs generate GHG reductions as a by-product of legitimate development priorities and that Parties would avoid unnecessary complexity related to monitoring, approval (etc.) process for SD-PAMs.

This section proposes two ways for the inclusion of SD-PAMs in a future climate regime:

- SD-PAMs as an instrument to register and recognise a country's efforts to limit the growth in GHG emissions while promoting sustainable development.
- SD-PAMs as a fully integrated component in a process that would lead (at some point in the future) towards developing country commitments.

4.2.1 SD-PAMs as a stand-alone option for developing countries

Under this option, developing countries would pledge to implement SD-PAMs. This pledge would not have automatic implications *vis-à-vis* a country's potential future commitments related to GHG mitigation.

Even if SD-PAMs cannot generate credits, implementing them could still be of benefit to pledging countries. Such benefits could include international recognition of SD advantages and GHG mitigation. Eventually, such efforts could be taken into account in a future negotiation on developing countries' GHG commitments.

The main advantage of this option would be to provide formal recognition for policies and measures undertaken by Non-Annex I countries that also limit emissions of GHG. This would enable all countries to formally participate in GHG mitigation at a national level, even if not all of these countries have quantified emission commitments. At present, there is no international registry of domestic policies and measures (although countries can and do outline GHG-mitigation measures in their national communications). SD-PAMs, to be fully recognised, would require some registration and assessment of their contribution to GHG mitigation. Note, however, that in the absence of crediting for SD-PAMs, the requirements of this process are likely to be lighter than that needed for a crediting mechanism²².

With the possibility of mutual pledges (with a country providing various forms of assistance towards the implementation of SD-PAMs in another country), a "recognition-only" SD-PAMs option would still provide a vehicle for broader international collaboration on mitigation activities. This could enhance development and deliver co-benefits, and also build capacity in developing countries. In turn, this could help SD-PAMs become a stepping stone to future climate commitments.

4.2.2 Full integration of SD-PAMs in the climate regime: the Sao Paulo Proposal

The BASIC Sao Paulo proposal tries to articulate the contribution of different mitigation tools for developing countries in a regime that would lead to the progressive graduation of developing countries towards full-fledged country-wide emission goals (see box below). In this proposal, SD-PAMs would be clearly distinct from crediting mechanisms, open up the possibility of specific funding for such policies, and create an incentive to keep emissions low with the help of SD-PAMs, as this would push back the date when countries must take more binding, country-wide commitments.

²² However, countries may wish to avoid negative publicity that could be associated with lower-than-anticipated levels of activity under a SD-PAM.

Box 2: A summary outline of the BASIC Sao Paolo proposal

The BASIC proposal suggests elements that should be included in a post-2012 climate regime. This includes an overall goal for the regime, as well as i.a. emission targets for Annex I/B Parties, other commitments (sometimes voluntary) for non-Annex I Parties, a carbon market– as well as provisions for adaptation and technology transfer. The proposal also suggests “triggers” for non-Annex I countries that would lead them to taking on national emissions targets.

Under the BASIC proposal, the proposed (voluntary) actions for non-Annex I countries include: participating in the CDM; quantifying the GHG impact of (selected) sustainable development actions; and adopting a non-binding sectoral or national GHG commitment. Participating in the CDM would generate CERs. Implementing a non-binding sectoral or national commitment could also generate credits (Voluntary Emission Reductions, VERs). Implementing and quantifying sustainable development actions would generate recognition (via an international registry of such actions) and would qualify countries to use simplified procedures to request funds from certain sources, but would not generate credits.

The framework put forward by BASIC would also limit total cumulative credits (including VERs) transfers from each non-Annex I country. This limit would vary by country and be fixed up-front for periods of 5 years. It would be calculated based on the capability, responsibility (including emissions per capita) and potential of a Party to mitigate. Once this limit is reached, the party “is expected to become an Annex I/B Party and accept a national emissions limitation commitment”.

This limit on credit transfers from a country means that non-Annex I countries can opt to approve particular actions as credit-generating activities – and therefore generate revenues from the carbon market for the project participant and, sometimes, the government. However, doing this will bring the “trigger”, and associated national GHG commitments, closer. Alternatively, non-Annex I countries could opt to register GHG-friendly sustainable development actions. This would not generate credits, but it would, if environmentally effective, lower the country’s per capita emissions and therefore delay the date at which it should take a nation-wide commitment. Put more simply, for as long as a country’s contribution to global emissions is kept low, this proposal suggests that the country need not take a legally-binding emission target.

The BASIC proposal was developed by researchers and policy analysts from 25 institutions in both developed and developing countries. It is available at http://www.basic-project.net/data/SP_prop_rev_nairobi.pdf.

The BASIC Sao Paolo Proposal proposes an integrated role for SD-PAMs, in a framework where their environmental effectiveness and the incentives for “host” countries to make them work would be embedded in the structure of present rights and future commitments for developing countries. This would take the pressure off of the international system with respect to the monitoring and assessment of SD-PAMs’ contribution to overall emission reductions. Individual financing sources could still apply their standard reporting requirements, but the environmental effectiveness would be reflected in the country’s overall GHG performance. However, the difficulties of reaching an agreement on the many parameters necessary to implement a climate framework such as the Sao Paolo Proposal should not be underestimated. Nevertheless, it does answer the question of incentives for developing countries to adopt and submit SD-PAMs to the international community and could inspire similar structures in other possible options for a post-2012 regime.

The BASIC proposal would also redress the current situation where there is no incentive for host countries to correct any over-generous baselines (or additionality assessments) of proposed CDM projects, or to limit the time for which these projects expect to generate credits. Indeed, over-generous baselines can directly benefit the host country government (as well as the project developer) if the host country government takes a share of the CER revenue. The BASIC proposal further recognises that

global GHG reductions will eventually require all countries to reduce emissions, whereas the current Annex I/CDM configuration sets a global offset regime that – if continued – will require an increasing willingness to pay on the side of countries with commitments.

The issues of funding, crediting and the purpose of including SD-PAMs in a post-2012 climate regime are interlinked. Whether SD-PAMs can generate credits will also influence how they are funded, and by whom – as well as the total funding available for such activities. In particular, allowing SD-PAMs to generate ex-post credits could increase the funding for SD-PAMs (presumably mainly ex post, but maybe also ex ante) from private-sector entities in countries with emissions commitments.

4.3 Funding SD-PAMs

This section presents ideas about possible sources of finance (other than GHG crediting) that could be used to encourage greater levels of uptake of sustainable development policies. A number of financial incentives could assist countries in implementing SD-PAMs, ranging from upfront grants to help countries prepare their development strategy to new instruments to provide ongoing finance for more programmatic issues (e.g. a transformation of institutions and policies according to broader SD strategies) as well as the deployment of low-carbon technologies.

If funding SD-PAMs generates international recognition, agreement may be needed on several issues. This includes what aspects of a SD-PAM is eligible for funding recognition (e.g. capacity development, establishing infrastructure, drawing up and/or implementing legislation); where SD-PAM funding comes from (national or international, public or private sector?); what the criteria for funding are.

SD-PAMs could be funded in a variety of ways. This includes “unconditional/unilateral” financing, i.e. by the developing country itself in the course of its development strategy. Such SD-PAMs would not require additional international funding. Certain policies and measures could thus be grouped under “unconditional” SD-PAMs, with the main purpose of recognition.

However, other SD-PAMs may need funding to extend activities beyond what would have happened anyway. Such SD-PAMs would reflect activities that are unlikely (or of secondary importance) in domestic investment plans and that would require some upfront financial incentives in order to be implemented. A second group of SD-PAMs could thus be “conditional” on additional international funding, which could be implemented mutually between a donor and a recipient country or in a harmonised way, including possibly both a group of donors and recipients.

Developing countries pledging to undertake such SD-PAMs would need to mobilise investments from external sources, including technology transfers and/or funding support from climate and non-climate related sources. Depending on the GHG reduction potential of the proposed SD-PAMs, developing countries could attempt to access climate-related funding. Funding possibilities include those provided by the UNFCCC and the Kyoto Protocol:

- The Global Environment Facility (GEF) Trust Fund aimed to fund projects in areas of global environmental concern;
- The three funds agreed upon by the UNFCCC parties in 2001 to support technology transfer, capacity building and adaptation planning: the Special Climate Change Fund (SCCF), the Least Developed Countries (LDC) Fund and the Adaptation Fund.

Other funding, including non-climate funding could play an important role in encouraging SD-PAMs, as – by definition – the aim of SD-PAMs is to reach non-climate goals. For example:

- Traditional Official Development Assistance (ODA) funds as well as a variety of public/international funding sources are available to support development projects in developing countries. For instance, the World Bank manages several types of funding mechanisms, and

some of them are funded in partnership with other donor agencies, such as the United Nations or other bilateral agencies.

- In addition, private flows to developing markets as well as new types of assistance focusing on soft, institutional, and selective aid have become the primary mode for technology and resource flows, including Foreign Direct Investment (FDI) as the largest (but very disproportionate) component of current external financing and task-specific public-private partnerships (Heller and Shukla, 2003). If SD-PAMs can generate credits, there may also be interest from the private sector in assisting their development and implementation.
- New funding sources could also be provided by international financial institutions, such as long-term concessionary loans by multilateral development banks or tax incentives through export credit agencies, as suggested by Lewis and Diringer (2007).

Funding requirements for SD-PAMs are likely to vary by sector and country. To set incentives for developing countries to embark on a more sustainable path for the economies, a programmatic approach providing funding for incremental technology costs as well as costs relating to establishing and implementing the policy could be attractive²³. A SD-PAM-like funding approach could shift this concept on a larger scale, promoting the transformation of policies and institutions, as suggested also by Heller and Shukla (2003) under the term of “Programmatic Climate Cooperation”. Their idea is to establish a new financial institution like a climate bank that allocates funds given by governments or private actors according to “*proposals from competing coalitions of public and private actors across or within different countries who promise investment commitments and supportive policy reforms at a stated price.*” (p. 133). In this way, the emerging market allows SD-friendly investments to become a normal part of investment profiles.

4.4 Concluding remarks on integration issues and incentives

The question of incentives for the adoption of SD-PAMs by developing countries ought to be a central part of consideration of their possible integration in a post-2012 climate mitigation regime. This section outlined the wide range in potential international-level benefits that implementing SD-PAMs could bring. At one end of the spectrum, GHG crediting of reductions achieved via SD-PAMs would be an integral part of the instrument. At the other, crediting for SD-PAMs would be excluded – although in some cases activities undertaken under a SD-PAM could still generate credits under the CDM. Other incentives to undertake SD-PAMs could also be envisioned, as well as national and international financial sources other than carbon finance.

Whether or not SD-PAMs could generate credits would have radically different implications on processes necessary to implement SD-PAMs. As illustrated by the CDM, crediting of countries’ actions can trigger suspicion while these do not operate under a country-wide quantitative emissions goal, even if such credits are accompanied by a thorough pre- and post-evaluation of achieved reductions and sometimes difficult discussions over baseline emissions. The scale of potential reductions under SD-PAMs and their stated aim as a by-product of other policy objectives is likely to make such discussions more difficult.

Several questions arise if activities under a SD-PAM are able to generate credits. Who would decide which countries are eligible to generate credits? Would the “additionality” of SD-PAMs need to be assessed, and if so, how could this be done? Given the large potential supply of credits that could be generated if SD-PAMs are eligible to do so, would this be greater than the demand for credits (thus reducing the carbon price)? Would crediting SD-PAMs require new or strengthened national and/or

²³ The need for such an approach is also recognised in the framework of the CDM, where programmatic CDM – or “Programme of Activities” – tries to broaden the project focus, allowing the submission of actual implementation of a local/regional/national policy as a single CDM project activity.

international-level institutions? If SD-PAMs can generate “SD-PAM” (rather than GHG) credits, how could these be measured with any confidence?

Incentives for measurable and verifiable GHG mitigation efforts by developing countries have become a critical element in the policy discussion²⁴. SD-PAMs could become part of this, via a dynamic, multiple-step process, even if SD-PAMs do not generate credits. This could start from the recognition and tracking of unilateral, domestically-funded, actions by developing countries that either reduce or limit growth in GHG emissions – and be gradually strengthened to include quantification of such activities as well as information on GHG mitigation from multilateral SD-PAMs and/or those which have also benefited from external funding sources.

5. SD-PAMs: Process for implementation under the UNFCCC

If SD-PAMs are to be officially recognised or credited as part of a post-2012 climate regime, international agreement will be needed on how this should be done. Such an agreement will need to comprise several different items. These include:

- The *purpose of SD-PAMs* in the climate framework (i.e. qualitative or quantitative recognition for efforts that mitigate GHG emissions or emissions credits).
- Whether a *single definition of a SD-PAM* is needed. If so, what that definition is, and if not, who can report what.
- *When countries can start and stop*²⁵ *using SD-PAMs* as their main internationally-recognised measure to mitigate global GHG emissions.
- The *process for identifying, submitting, financing, approving, registering, monitoring/reporting, evaluating/reviewing and providing recognition for SD-PAMs*, and whether this can be done under the UNFCCC, or whether it needs a different framework..

This section focuses on the different steps in the last item, as the other issues have been explored earlier. According to the overall objective that SD-PAMs have, the exact way they are implemented can differ significantly. In general, the impacts as well as the complexity of implementation depend on the need for international assistance to support SD-PAMs and on any decision as to whether their implementation/registration is voluntary or mandatory for some countries (e.g. as suggested by the South-North Dialogue (Ott et al 2004)).

5.1 Identifying and preparing SD-PAMs

The first stage for developing countries that want to use SD-PAMs as part of an international GHG mitigation effort is to determine development goals and identify policies and measures that allow these development goals to be achieved with lower GHG emissions than would occur otherwise. As per Winkler et al (2002) these policies and measures may include ones that are existing but not fully implemented, and/or new/more stringent policies and measures. (Which of these categories are eligible will need to be agreed internationally. This is discussed below).

²⁴ See e.g. the outcomes of the Riksgränsen meeting, <http://www.sweden.gov.se/sb/d/2066>

²⁵ Because of the rapid pace of development in some – but not all – non-Annex I countries, it will be important to include a “sunset clause” indicating when countries can no longer focus their GHG mitigation commitments on SD-PAMs. If such a clause is not included, it will risk establishing a situation where some countries can benefit from a particular type of GHG mitigation activity forever.

Several non-Annex I countries already identify their sustainable development priorities and are developing and implementing policies and measures designed to reach these goals. This may be being undertaken as part of a country's effort to implement Agenda 21 (1992), which called on all governments to develop and implement a "national sustainable development strategy" (NSDS). China, Brazil, South Africa and several other developing countries are already implementing such a strategy (see e.g. UNESA 2006, ACCA21 not dated, Xinhua 2006). Other countries, such as India, may include such policies and measures as part of their Five Year Plans (which detail medium-term development goals for the country). Alternatively, countries that have not yet implemented a national sustainable development strategy could use other sources, such as the World Bank's Country Assistance Strategy (CAS). This sets out a comprehensive diagnosis of the country's development situation as well as challenges, including also the country's own vision of its development goals. Based on this information the CAS lays out a plan for development and identifies the key areas where the assistance can have the biggest impact on poverty reduction.

If countries agree, then either a NSDS or a CAS could become a prerequisite for the use of SD-PAMs. Finally, a standard format for submission could also be proposed to facilitate the submission of SD-PAMs for developing countries.

5.2 Submitting SD-PAMs

Once SD-PAMs have been identified and prepared, they will need to be submitted to some sort of body. Given the differences among developing countries and their SD priorities, SD plans are expected to differ largely amongst each other. At this stage, it should be made clear what would constitute an eligible SD-PAM and which countries are required to implement SD-PAMs, or could generate credits, recognition (or other incentives) by pledging and implementing them. Based on these definitions, a process needs to be established that would allow eligible countries to submit eligible types of policies and measures. International agreement would be needed on what types of policies and measures can be submitted, e.g. existing and/or planned; funded and/or not funded; partially implemented and/or planned. Agreement is also likely to be needed on which of the (expected) impacts from SD-PAMs are to be listed, e.g. GHG coverage, local environmental effects, employment implications, etc.

One of the main objectives of SD-PAMs is to recognise developing countries' domestic actions. This implies that additional funding/investments for SD-PAMs may not always be needed. Thus, two types of SD-PAMs could potentially work in parallel:

- **unconditional pledges** (not requiring further financing), and
- **conditional pledges** (requiring financing, and going beyond what would have happened anyway in the developing countries' policy plan).

The submission process would need to be structured. One possible means to do this is to establish a register of such policies and measures, as well as a list of countries eligible to pledge SD-PAMs (e.g., in an Annex), and some minimum requirements for SD-PAMs. The scope of policies that could be pledged/used could vary, and could also include an indicative list of SD-PAMs, encompassing either a wide range of policies and measures or a set of several big ones.

This submission process would have institutional implications. For example, it would need a decision by the COP or COP/MOP on a new Annex for countries that are allowed to pledge SD-PAMs. Alternatively, all Parties that have not taken country-wide goals may be automatically eligible for SD-PAMs. In addition, a COP decision on a registry including a list of pledged policies and measures may be required.

5.3 Financing process

In some cases, developing countries may need to mobilise international and/or private-sector investments to implement SD-PAMs. Unconditional/unilateral SD-PAMs that are primarily implemented for recognition purposes would not require additional international financing. Instead, developing countries pledging other SD-PAMs would need to mobilise investments from external sources, including technology transfers and/or funding support from climate and non-climate related sources (depending on the GHG reduction potential; see section 3.1). Countries should report on whether each SD-PAM proposed is unilaterally funded or not.

5.4 Approval/registration process

Some sort of international oversight²⁶ is likely to be needed to approve the listing of a particular policy and measure as a SD-PAM and to register it in an international register. The greater the international-related benefits from undertaking SD-PAMs (e.g. emission credits, increased or facilitated access to funding) the greater the need for such oversight is likely to be.

The least amount of international oversight for SD-PAMs will be needed if SD-PAMs generate qualitative international recognition of actions undertaken to reduce GHG emissions. This could involve a registry of SD-PAMs, as well as an agreed process to identify and submit SD-PAMs and a definition of what an eligible SD-PAM is. The registry for such SD-PAMs could be a relatively small undertaking (such as a list of items undertaken and/or currently implemented by country) if SD-PAMs are to generate qualitative recognition only.

However, if recognition for SD-PAMs is quantitative, a methodology will be needed to calculate the GHG-impact of the SD-PAM. In such a case, the international community will need to decide if such methodologies need to be approved internationally (e.g. via a bottom-up process as in the CDM, or in a top-down process – or indeed, whether CDM methodologies can be used). In such a case, the SD-PAMs registry would need to include more information (such as that outlined in section 4.2 above). It may also need a supportive international body, e.g. to check quantitative estimates of GHG mitigation. This would be a larger undertaking.

A COP decision on this institutional issue as well as on the registry would be needed in order to make developing country mitigation measurable and reportable and prepare them to be quantifiable and verifiable²⁷. If a decision is made to go along this route, funds would be needed to finance the associated international and national institutional capacity requirements. It also raises the question of who would provide the resources to run such a registry and support such a body if SD-PAMs do not generate credits.

5.5 Monitoring/reporting process

How much monitoring and reporting is needed for SD-PAMs will depend on whether SD-PAMs can generate credits, and if so, whether these are “SD credits” or GHG credits. Even if SD-PAMs cannot generate credits, the extent of monitoring and reporting needed will depend on whether recognition for implementing SD-PAMs is qualitative or quantitative.

A registry could potentially play an important role in monitoring and reporting SD-PAMs. A critical issue is whether monitoring and reporting process should be limited to the registry itself, a separate

²⁶ Agreement may also be needed within a country if a particular action is to be registered as a SD-PAM. This is unlikely to be difficult to achieve, unless registration as a SD-PAM disqualifies a particular policy or measure from something, e.g. generating CDM credits.

²⁷ For example, a specific body under the guidance of the COP/MOP could be made responsible for the registration, of SD-PAMs e.g., a SD-PAM Supervisory Board, similar to the Executive Board of the CDM. Also, the UNFCCC secretariat could maintain the registry.

monitoring tool, or part of the national communications process. While there are guidelines for what should be reported in a national communication, and how, there would be some disadvantages with reporting SD-PAMs solely via national communications. In particular, National Communications are only required sporadically, and so can contain information that are several years out of date. A separate reporting for SD-PAMs is likely to be preferable, designed with a narrow scope and less technically challenging (Winkler, Howells and Baumert, 2005).

In addition, reporting provisions need to be established. These monitoring and reporting provisions will in turn impacts the institutional requirements needed to supervise SD-PAMs.

5.6 Review/evaluation process

The aim of the review is to evaluate whether a SD-PAM has been implemented and whether the pledged levels of GHG mitigation has been achieved, particularly if additional financing/crediting is involved. If not, the review/evaluation process will highlight additional areas that need to be addressed. An additional question is whether this process would distinguish between existing and new policies and measures, e.g. how so-called “early action” SD-PAMs could be treated and whether they also get recognition²⁸.

Requirements for evaluation and review are closely related to the decision on how to monitor SD-PAMs. Whether a precise quantification of the SD-PAMs’ contribution to GHG reductions and broader sustainable development is important from the start depends strongly on the primary motivation and thus design of the SD-PAMs. In a first step, assuming that no crediting is involved, this could involve an estimate of the policy or measure’s GHG impacts compared to business as usual (on an annual or commitment period basis). The achievements of the sustainable development aspects of the SD-PAMs would not necessarily require monitoring under the UNFCCC, as (a) it would be the countries’ responsibility to put forward only those measures that achieve their own domestic sustainable development as well as GHG emissions reductions; (b) monitoring achievement of sustainable development goals does not fall within the expertise of the UNFCCC; and (c) there are already other international bodies – such as the UN Commission on Sustainable Development – that monitor progress towards these goals.

Some body or institution would be needed to review and evaluate SD-PAMs, and also potentially to collect, develop and compile methodologies to quantify the impacts of SD-PAMs. Such a body could be set up to be similar to the CDM Executive Board, i.e. supported by other bodies (e.g. a Methodology Panel of the SD-PAM Supervisory Board operating under the guidance of the COP/MOP). Also an existing body could be engaged, as the Consultative Group of Experts on National Communications from Non-Annex I Parties (CGE) for approval by the COP/MOP. This has already been suggested by the Sao Paulo Proposal (BASIC 2006).

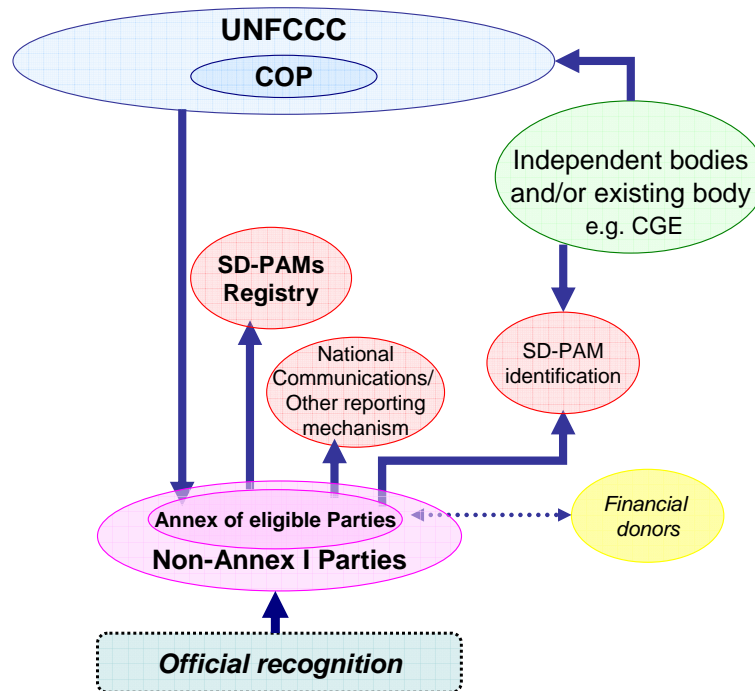
The review of SD-PAMs (through e.g. information available in the SD-PAMs registry) could be processed similarly to how Annex I countries’ national communications are treated. Thus, it could use UNFCCC experience and established procedures as regards ‘in depth’ reviews (e.g. through a ‘facilitative approach’, cf. Winkler, Howells and Baumert, 2005). However, independent bodies may be needed as additional institutional support to act as facilitators for the review.

Figure 4 provides an overview of the bodies, tools and COP (or COP/MOP) decisions that could be needed to formally recognise and register SD-PAMs. It is an open question as to whether such recognition could be done via provisions already existing in the UNFCCC, or whether new provisions are needed. For example, Article 4 of the Convention requires “all Parties” to “formulate, implement, publish ... national ... programmes containing measures to mitigate climate change”, and that these Parties shall also “communicate to the Conference of the Parties information related to implementation”. However, Article 12 then indicates that the information that non-Annex I Parties need to communicate on these policies is “a general description” as well as “any other information”. Only Annex I Parties are required

²⁸ Alternatively, this question could be treated as one of the over-arching questions of SD-PAM eligibility.

to include “a detailed description of the policies and measures...” and “a specific estimate of the effects that the policies and measures ... will have”. This would imply that while it could be possible to use existing provisions in the UNFCCC for qualitative recognition of SD-PAMs, any quantitative recognition (and/or crediting) of SD-PAMs would need to be done under a different framework.

Figure 4: Overview of bodies and tools/decisions that could be needed to implement SD-PAMs (if SD-PAMs generate qualitative recognition only)



Source: authors

Figure 5 shows that a greater level of institutional oversight will be needed if SD-PAMs generate quantitative recognition, increased access to international funds for SD-PAMs, or credits. Such oversight could be provided by some sort of “SD-PAM” supervisory body, on the basis of an internationally-set framework (e.g. that laid out SD-PAM performance indicators, process and timing to review SD-PAM reports etc.). The UNFCCC text does not include provisions either for non-Annex I Parties to submit detailed information on policies and measures, nor for the assessment or other oversight of any such information provided.

development priorities. They could be implemented by one non-Annex I country or by several non-Annex I countries, and they could be funded either from solely domestic sources or from domestic and international funds.

Incentives

SD-PAMs could be encouraged in various ways. This could be in the form of:

- **Credits.** Whether some form of crediting is appropriate for SD-PAMs is a complex policy question. If GHG crediting were deemed acceptable, how could the “additionality” of a SD-PAM be determined, how would the level of credits be calculated, and would the ability to generate credits affect a country’s willingness to take on emissions limitation targets in the longer-term? Further, would there be sufficient demand for the level of credits that SD-PAMs could generate (up to 3 billion credits in 2030 from the power sector in developing countries)?
- **No credits, but other benefits.** Implementing SD-PAMs could facilitate funding from certain sources (national or international). It could also lead to other benefits, such as capacity building. However, ruling out GHG crediting from SD-PAMs is likely to reduce the total amount of international funding for such activities.
- **International recognition for activities undertaken.** While bringing no direct financial benefit, international recognition of countries’ efforts in GHG mitigation activities could also be beneficial to countries implementing SD-PAMs by showing that all are indeed undertaking GHG mitigation activities.

Another possibility is that implementing SD-PAMs would grant a special status to countries that undertake them, through the UNFCCC Parties’ recognition that measures have been implemented that limit the countries’ GHG impact. These countries could be put on a slower track towards the adoption of binding GHG targets. Such an advantage would presumably require a fairly robust assessment of the SD-PAMs’ effectiveness in curbing GHG emissions, as well as some general framework to assess various countries’ contribution to mitigation. Alternatively, as proposed in the BASIC Sao Paulo Proposal, the effectiveness of SD-PAMs may be measured in countries’ total GHG emissions.

Process for implementation

In order for SD-PAMs to be implemented, several issues will need to be agreed at an international level. This includes general and eligibility-related items such as the purpose of SD-PAMs, what the definition of SD-PAMs is, when countries can start using SD-PAMs, when countries are no longer eligible to focus their GHG mitigation activities on SD-PAMs only, and how SD-PAMs are to be encouraged. It also includes more technical issues, such as the process for identifying, submitting, approving, registering, monitoring, evaluating and providing recognition for SD-PAMs.

Lessons from other processes or bodies can be useful in this regard. For example, national processes in developing national sustainable development strategies and/or World Bank-related processes to develop a country assistance strategy (known as CAS) could be helpful in identifying and preparing SD-PAMs. The level of international oversight needed for submitting and approving SD-PAMs could learn from the institutions or processes developed under the CDM. The monitoring and evaluation process could be similar to that used in the in-depth review of (Annex I) countries’ inventories and/or national communications. In general, the greater the incentives available for implementing SD-PAMs, the greater the level of stringency of international oversight is likely to be needed (Table 2).

Table 2: Possible international requirements to register SD-PAMs

International benefit of implementing a SD-PAM	Associated approval requirements
Qualitative recognition of domestic action on GHG	<ul style="list-style-type: none"> • Host country description/aim of SD-PAM • Indication of timing, actors, sectors
Quantitative recognition of action on GHG emissions	<ul style="list-style-type: none"> • (as above, and) • Methodology to calculate associated emission reductions
Increased access to international funding	<ul style="list-style-type: none"> • (as for qualitative recognition, and) • Additional cost requirements (for conditional SD-PAMs) • Information on costs and benefits of any international contribution/funding • Decision-making body for SD-PAM registration, or process to allocate funds (if SD-PAMs can be funded from a central body or funding source)
Tradeable emission credits	<ul style="list-style-type: none"> • (as for quantitative recognition, and) • External verification that SD-PAM has been implemented as expected (similar to DOEs) • Decision-making body to approve proposed SD-PAM as a credit-generating activity, and to issue credits (similar to the CDM EB)

Source: authors

Provisions under Articles 4 and 12 of the UNFCCC could be used as a basis to collect qualitative information on SD-PAM development and implementation in non-Annex I countries. However, it is likely that a new institutional and oversight framework would be needed if non-Annex I countries were to submit quantitative SD-PAMs information, and/or if implementing SD-PAMs generated credits.

Summary conclusions

Given that SD-PAMs are supposed to be a “stepping stone” for developing countries to officially participate in international-level efforts to reduce GHG emissions, undertaking SD-PAMs can have implications for participating countries’ next steps in a climate regime. SD-PAMs are compatible with multi-stage approaches, and can encourage capacity building, learning-by-doing, and above all a comprehensive collection and registration of policies and measures. This sets the basis for a broader GHG mitigation policy framework across countries. It can also provide a more complete picture on, as well as involvement in, climate change efforts. If SD-PAMs are designed as a voluntary approach (likely in a first step), with corresponding voluntary reporting, the next step could consist in making the reporting process mandatory.

Better information on countries’ mitigation actions could simplify negotiations on the broadening of climate policy efforts, but they could also involve a risk of slowing this process down. This could happen if SD-PAMs led to developing countries focusing their GHG mitigation activities on SD-PAMs only for the foreseeable future, as this action could defer their entry into a binding climate policy regime.

When designing a post-2012 GHG mitigation regime, Parties will need to decide which types of tools or mechanisms to include in this regime. Decisions on whether or not to include SD-PAMs should balance the capacity of SD-PAMs to deliver significant GHG reductions in light of existing alternatives (e.g. bilateral aid, technical assistance, CDM) with the resources and time that would be required to register and evaluate SD-PAMs in the UNFCCC. This will, in turn, vary with the purpose of and recognition expected for SD-PAMs.

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Glossary

BAU	Business as usual
CAS	Country assistance strategy
CDM	Clean development mechanism
CDQ	Coke dry quenching
CGE	Consultative group of experts
CO ₂	Carbon dioxide
Conditional SD-PAMs	SD-PAMs that would only be implemented if further funding (e.g. from international sources) was made available
GDP	Gross domestic product
GHG	Greenhouse gas
Harmonised pledges	A joint pledge by two or more countries to undertake a particular (set of) SD-PAMs
Mutual pledges	A pledge to undertake a SD-PAM by a country providing funding for the SD-PAM and the country in which the SD-PAM would take place
SD-PAM	Sustainable development policy and measure
UNFCCC	United Nations' Framework Convention on Climate Change
WB	World Bank