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# Perspectives and Challenges to the Continuation of Joint Implementation Post-2012

*Wolfgang Sterk*

## Summary

**The purpose of Joint Implementation (JI) is to allow industrialised countries to tap into lower-cost emission reduction potential in other industrialised countries and thus enable them to achieve their Kyoto targets more cost-efficiently. The host country benefits by receiving investments that would otherwise not be possible. JI projects are also hoped to contribute to the transfer of innovative low-carbon technology between countries.**

**Since the implementation of JI is starting only now, an assessment in how far the mechanism actually achieves these aims cannot yet been made. However, lessons can be learned from its twin mechanism, the Clean Development Mechanism (CDM), which has had ambivalent results. On the one hand, it has mobilised thousands of projects and billions of investments in a very short timeframe. On the other hand, it has faced serious criticism as to the strength of the incentive it actually provides, its environmental integrity and its contribution to sustainable development.**

**For developing countries, much of the discussion about the future of the CDM currently revolves around the establishment of sectoral approaches. For industrialised countries, sectoral approaches are in fact already being implemented in the form of domestic emission trading systems such as the EU ETS. These cover the sectors most accessible to emissions trading and thus significantly reduce the potential scope of JI.**

**Furthermore, while discussing the establishment of domestic ETS, the EU and several non-EU countries are also discussing the introduction of DOPs. This would create a further competitor for JI, which can be expected to narrow its scale down even further. At the same time, the parallel introduction of DOPs in several countries on the basis of diverging standards raises the prospect of a further fragmentation of the emissions trading market.**

**Despite all these limitations, the continuation of JI post-2012 may play a role for achieving approval of countries such as Russia and the Ukraine for a post-2012 agreement. Moreover, as one of the results of the post-2012 negotiations, a number of countries which are currently not listed in Annex I may join Annex I. Other countries may not fully join Annex I yet but assume binding targets for certain sectors of their economies. Continuing JI post-2012 would reassure these countries that they could still host projects if they want. Retaining JI after 2012 would also allow to convert projects in such countries that started under the CDM into JI projects.**

**Based on this analysis, the paper derives three main recommendations for the future development of JI.**

***Work towards Comprehensive Coverage of Emissions through Cap-and-Trade Systems***

**From the environmental perspective, company-based cap-and-trade systems such as the EU ETS are highly preferable to baseline-and-credit systems like JI. It would therefore be recommendable for all Annex I countries to introduce domestic ETS.**

***Allow Unilateral JI***

**For the sectors not covered by domestic ETS, there is currently a prospect that most industrialised countries will establish their own DOP systems based on diverging standards. To prevent a further fragmentation of the emissions trading market and achieve a uniform international standard, it might therefore be preferable to amend the Kyoto rules to allow for unilateral JI projects instead.**

***Consider Merging the Joint Implementation Supervisory Committee with the CDM Executive Board***

**If the current low level of activity at the Joint Implementation Supervisory Committee continues, one might consider to merge it with the CDM Executive Board. This could also contribute to strengthening the environmental integrity of JI. Due to the inherent uncertainties of baseline-and-credit approaches it would be recommendable to shift from bottom-up to top-down approaches for baseline setting and the demonstration of additionality. However, while the CDM has a system for developing and approving methodologies, JI does not. This suggests using the existing CDM capacity for this task instead of establishing a completely new structure under the JISC.**

**There are certainly differences between the mechanisms and in national circumstances between developing and industrialised countries that would need to be taken into account. But the differences between Least Developed Countries and emerging economies are equally significant. A combined approach would therefore probably not entail a greater risk that inappropriate one size fits all methodologies would be developed than the current CDM.**

# 1 Introduction

Under the Kyoto Protocol's Joint Implementation (JI) mechanism, industrialised countries (Annex I countries) can finance greenhouse gas (GHG) emission reduction projects in other industrialised countries and count the resulting Emission Reduction Units (ERUs) towards their Kyoto emission targets. In addition, in many industrialised countries companies can also purchase ERUs and count them towards their national climate protection obligations. The purpose of this mechanism is to allow industrialised countries to tap into low-cost emission reduction potential in other industrialised countries and thus achieve their Kyoto targets more cost-efficiently.

JI has been much slower to develop than its twin, the Clean Development Mechanism (CDM), which covers projects between industrialised and developing countries. While the CDM was "prompt started" by the seventh Conference of the Parties (COP 7) to the United Nations Framework Convention on Climate Change (UNFCCC) in Marrakesh in 2001, the regulations on JI entered into force only after the Kyoto Protocol as a whole entered into force in 2005. Moreover, ERUs can be generated only from 2008 onwards.

The JI pipeline overview by the UNEP Risoe Centre lists 134 projects which are at least at determination, which expect about 52,000 ERUs annually and about 250,000 ERUs cumulatively by 2012. The JI Supervisory Committee (JISC) has so far accepted one project and rejected the second one that was submitted. A third project is currently being assessed by the JISC (Fenhann and Lema 2008a). By comparison, currently about 3,300 CDM projects have been registered or are at the validation stage, expecting an annual 480 million Certified Emission Reductions (CERs) and a cumulative 2.6 billion CERs by 2012 (Fenhann and Lema 2008b).

The ongoing negotiations on the future of the international climate regime after the expiry of the Kyoto Protocol's first commitment period in 2012 raise the question what role and form JI should have post-2012. Several aspects need to be considered. The first aspect is obviously the merits of the mechanism itself, i.e. its utility and environmental integrity. Secondly, with the introduction of domestic emission trading systems (ETS) in most industrialised countries, JI now operates in a much more complex environment than was originally foreseen. Moreover, most of these systems envisage the introduction of domestic offset projects (DOPs), which would essentially be unilateral JI projects. These developments raise new challenges to the functioning of JI. Thirdly, post-2012 a number of countries which are currently not in Annex I may join Annex I and thus transition from being CDM to being JI host countries.

This paper aims to highlight the questions that need to be considered for the continuation of JI post-2012 and to provide options for the way forward. It begins with a brief overview of the strengths and weaknesses of JI. Secondly, discussions about the further development of emissions trading after 2012 should be guided by an understanding of how emission reduction options are structured and who are the actors that would need to make investment decisions. The paper therefore briefly discusses mitigation options, though without a claim to being comprehensive. This discussion is followed by an analysis of the challenges posed to JI by the introduction of domestic ETS and DOPs. Finally, the article discusses the potential role of JI in the overall post-2012 climate regime and possibilities for future development.

# 2 Strengths and Weaknesses of Project-Based Mechanisms

The purpose of JI is to allow industrialised countries to tap into lower-cost emission reduction potential in other industrialised countries and thus enable them to achieve their Kyoto targets more cost-efficiently. The host country benefits by receiving investments that would otherwise not be possible. JI projects are also hoped to contribute to the transfer of innovative low-carbon technology between countries.

Since the implementation of JI is starting only now, an assessment in how far the mechanism actually achieves these aims cannot yet been made. However, lessons can be learned from its twin mechanism, the CDM.

On the positive side, the CDM experience suggests that a quick growth of the JI pipeline could be possible once the initial obstacles of establishing the mechanism have been overcome. CDM implementation started in 2001 but it nevertheless took more than three years until the first project was registered in 2004. By now, the mechanism has reached a scale of thousands of projects and gigatonnes of emission reductions.

As a result of this dynamic development, the CDM has in a very short timeframe mobilised billions of investments. The capital that was invested in projects registered in 2006 alone was estimated at 7 billion US$ (UNFCCC 2007a: 140). The CDM has in many countries initiated an intensive search for emission reduction opportunities and in some areas, most notably the highly potent greenhouse gases such as hydrofluorocarbons (HFCs), effected an abrupt break of emission trends. By making it possible to make a profit from reducing emissions, the CDM has also contributed to raising awareness about the climate problem.

However, the CDM experience also highlights that baseline-and-credit project mechanisms have a number of weaknesses which impair their effectiveness in mobilising low-cost emission reduction potential as well as their environmental integrity. These are:

- Structural limitations to the incentives project-based mechanisms provide
- Doubts about the additionality of projects

The following will go over these two problem areas in turn. Table 1 summarises the main points of criticism.

**Table 1: Weaknesses of JI**

| Strength of Incentive | Environmental Integrity |
|---|---|
| • Need for prefinancing<br>• High transaction costs<br>• Revenue risks<br>• Prices too low for important project categories<br>• Important sectors such as transport, demand-side energy efficiency difficult to address<br>• No incentive for sectoral transformation | • Additionality in most cases difficult if not impossible to prove and validate |

## 2.1 Structural Limitations to the Incentives Provided by Project-Based Offset Mechanisms

Projects often require financing before the start of the project. CERs and ERUs, however, are only generated when the project is already operational. While there are some purchasing programmes where it is possible to receive part of the revenue upfront, the dominant market model has so far been "payment on delivery". Moreover, upfront payment is a tradeoff between receiving early financing and the amount of financing received: since there is always a risk that a project will fail or not generate as many emission credits as expected, credits sold upfront fetch a lower price than issued credits. In the CDM, the range is currently 8-10 Euros for medium-risk forward sales, 10-13 Euros for low-risk forwards, 10-14 Euros for CERs from registered projects, and 14-16 Euros for issued CERs (GTZ 2008).

The development of a project is connected to high transaction costs for the development of the project design document (PDD), determination, registration, monitoring, and verification. Practical experience from JI is scarce so far, in the CDM these costs may range from several ten to several hundred thousand US$ (Ecosecurities/UNEP Risoe 2007: 73). Moreover, the larger part of these costs is incurred before the start of the project and thus further exacerbates the upfront financing problem.

The additional ERU revenue is subject to high risks. Ex ante, project developers cannot be sure whether their project will be registered, whether it will actually achieve the expected amount of emission reductions and which price they will receive for the ERUs. Relying on ERU revenues to make an otherwise unprofitable project profitable is therefore a very uncertain proposition.

Moreover, the CDM has shown that as a result of these risks banks often do not take these revenues into account when deciding on giving a loan to a project (Ecosecurities/UNEP Risoe 2007: 73). This effectively shuts many project developers out from one of the most important financing options.

For many project types current credit prices are too low to significantly increase profitability. For example, for $CO_2$-avoiding renewable energy projects the internal rate of return (IRR) is usually increased only by a few percentage points (Willis, Wilder und Curnow 2006).

The CDM has also shown that a project-based mechanism may be fundamentally ill-suited for many types of renewable energy and energy efficiency projects because activities in these areas are often of a dispersed nature, have relatively high transaction costs and yield relatively low emission reductions (Figueres et al. 2005: 4). This is even more true in the case of the transport sector. Transport emissions usually stem from a large number of small mobile sources and traffic growth depends on a variety of external factors. Even if reliable data is available, establishing a project's baseline and accurately monitoring its emissions pose enormous challenges. Moreover, transport projects usually serve a variety of objectives, which makes it difficult to establish that a project would not have taken place under business as usual (Browne et al. 2005; Wittneben et al. 2008).

To help tap into dispersed emission reduction potential, the new project type of Programmes of Activities (PoA) was developed under the CDM. It allows the aggregation of decentralised activities under the coordination of one central actor. PoAs are also already being implemented under JI, for example a JI Model Pro-

ject in the German federal state of North Rhine-Westfalia.[1] Since the final rules for the implementation of PoAs were agreed only in 2007 (UNFCCC 2007b), it remains to be tested whether this approach does indeed offer better prospects for decentralised small-scale activities.

## 2.2 Doubts about the Additionality of Projects

ERUs are supposed to be awarded only for emission reductions that are "additional", i.e. reductions that would not have occurred in the absence of the project. JI is different from the CDM in that the ERUs are subtracted from the host countries' budget of Assigned Amount Units (AAUs). JI thus shifts trading units between countries but the overall GHG "budget" established by the Kyoto Protocol for industrialised countries stays the same. Awarding ERUs to non-additional projects therefore has not the same negative climate impact as under the CDM, which generates new trading units which are added to the budget established by the Protocol. Also, since it has to give up AAUs, the host country has an interest in authorising only projects which achieve real emission reductions.

Nevertheless, while non-additional projects would not harm the climate, "offsetting" emissions with emission reductions that have actually not occurred would nevertheless raise concerns of credibility and undermining public support for the mechanism. This issue is particularly salient with respect to the high amounts of surplus AAUs many central and Eastern European countries dispose of. Due to the economic collapse and restructuring after the end of Communism emissions in many of these countries are currently much lower than allowed under the Kyoto Protocol, and countries with high amounts of surplus AAUs might not be as concerned about losing some through non-additional projects than they might be if they had no surplus.

The CDM has shown that determing the additionality of projects is not at all a trivial question. For example, a survey by Axel Michaelowa, a member of the CDM Registration and Issuance Team, and Pallov Purohit of 52 CDM projects registered in India by May 2006 found significant deficiencies as regards the demonstration of additionality by the project developers and the evaluation of the projects by the validators (Michaelowa and Purohit 2007). Lambert Schneider, a member of the CDM Methodologies Panel, recently estimated that additionality is unlikely or questionable for up to 40% of the projects registered so far, accounting for about 20% of expected CERs (Schneider 2007).

It bears noting that the difficulty is not only the implementation of the additionality concept but there are also fundamental problems. The baseline-and-credit approach measures projects based on assumptions about what would have happened in the future under "business as usual" conditions, which is by definition hypothetical. In essence, it is not logically possible to prove a negative, i.e. that something would not have happened without the offset mechanism. Moreover, external validators are always at an information disadvantage against project developers, and indicators used to determine additionality such as the IRR can be easily manipulated by modifying project assumptions such as the discount rate and capacity factor.

An option to contain the problem would be to shift the methodologies for baseline development and additionality testing from bottom-up to top-down approaches based on objective criteria such as technology penetration rates or benchmarks, e.g. in terms of kilogrammes of emissions per tonne of product produced. The

[1] EnergieAgentur.NRW - JIM.NRW - Joint Implementation Modellprojekt NRW: http://www.energieagentur.nrw.de/emissionshandel/page.asp?TopCatID=2177&CatID=6358&RubrikID=6358 [accessed on 19.05.2008]

criteria could be set below BAU levels to cancel out non-additional reductions from activities that would have taken place anyway.

However, no approach to demonstrating additionality can ever be perfect since it will always rest on hypothetical assumptions about what would have happened under "business as usual". Regulating additionality testing is therefore always a balancing act between accepting non-additional projects and shutting out truly additional projects. Where this balance should be struck is a policy decision. Also, defining appropriate thresholds for benchmarks and penetration rates would be a complex challenge since it would need to take into account the specific circumstances of a technology, country and sector.

# 3 What and Who Needs to be Incentivised?

Discussions about the further development of emissions trading after 2012 should be guided by an understanding of how emission reduction options are structured and who are the actors that would need to make investment decisions. These factors vary from sector to sector and partly also from country to country. The following therefore briefly discusses some main mitigation options (largely based on IPCC 2007), though without a claim to being comprehensive.

In the area of "traditional" energy supply from large power plants investments are primarily made by state or private power utilities. Mitigation options are improvements in generation efficiency, reduction of distribution losses, combined heat and power, fuel switch, and carbon capture and storage. Especially for the latter two options the internationalisation of costs through emissions trading or taxes can create important incentives. Efficiency improvements, however, are often not being made even where they would be self-financing. Reasons are non-economic barriers such as lack of information or difficulties in raising the necessary capital. Further improvement of profitability by carbon pricing does therefore not necessarily attack the root of the problem.

Renewable energy applications by contrast (except for large hydropower) are so far strongly being developed by small and medium enterprises. Open access to the grid for these actors is one of the main success factors of the German feed-in tariff system. However, in many countries independent providers are shut out by state monopolies or discriminating regulation. Moreover, for many projects current carbon prices are too low to significantly improve profitability (see above).

In the industry sector one needs to distinguish between emissions of $CO_2$ and other GHGs. The development of the CDM has shown that reductions of the highly potent GHGs can be well tapped through emissions trading. Reductions of $CO_2$ emissions, by contrast, require incremental process and energy efficiency improvements, raising again the problem of non-economic barriers.

In the residential, commerce and service sectors there is massive emission reduction potential through energetic renovation of buildings and introduction of energy efficient heating, lighting and electric appliances. Investors are mainly the private building owners and the users of electric appliances. The massive efficiency potential is not being used for a variety of reasons such as lack of information or capital or the principal-agent problem: when renovating a building the energy cost savings accrue to the lessees but the costs are borne by the lessor. Efficiency improvements can therefore often be best achieved through government

measures and regulations such as building codes which remove these barriers. Unsurprisingly, therefore, the CDM has so far had very little success in this area. Out of the currently 3,324 projects that have been registered or are at validation, only nine address energy efficiency in households (Fenhann and Lema 2008). In JI, none of the currently 134 projects in the pipeline addresses energy efficiency in households (Fenhann and Lema 2008).

For the transport sector one can distinguish between investments in transport infrastructure and investments in vehicles. Infrastructure investments are usually a task of governments, as are investments in vehicles for public transport. Investments in vehicles for private transport are made by the users. Emission reduction options are introduction of more efficient vehicles, changes in driving behaviour and shifting from individual to public and from motorised to non-motorised transport. Spatial planning also has a central role: dense settlement structures with short distances between places for living, working and leisure minimises transport needs and thus $CO_2$ emissions. As noted above, the fact that transport emissions stem from huge numbers of small mobile emission sources makes quantifying emissions especially difficult. Partly for this reason, the transport sector has so far also seen very little CDM activity. There are currently six projects already registered or at validation (Fenhann and Lema 2008). In JI, there is no transport project so far (Fenhann and Lema 2008).

Options in agriculture are changed crop and land management to increase soil carbon storage, restoration of cultivated peaty soils and degraded lands, improved techniques for rice cultivation and livestock management to reduce methane emissions and improved nitrogen fertiliser application. Options in the forestry sector are afforestation, reforestation and reducing deforestation. The quantification of forestry emissions and reductions has proven to be highly complex. As a consequence there are so far only 18 afforestation/reforestation projects in the CDM pipeline and none in the JI pipeline (Fenhann and Lema 2008a; Fenhann and Lema 2008b).

Main options in the waste sector are methane recovery from landfills, waste incineration with energy recovery, composting of organic waste, controlled wastewater treatment, recycling and waste minimisation. Both CDM and JI have so far tapped especially successfully into the methane-related reduction options such as landfill recovery. Since methane is 21 times as potent a GHG as $CO_2$, methane projects receive high numbers of credits, which makes projects highly profitable. The CDM pipeline has no less than 267 landfill gas projects at least at validation (Fenhann and Lema 2008b).

Looking at the sectors, one can therefore draw a basic distinction: reduction options at large installations such as in the energy and industry sectors can be tapped into relatively easily by emissions trading. Not by chance these are exactly the sectors covered by the EU ETS. By contrast, other reduction activities such as in the renewable energy, buildings and transport sectors are not only often decentralised and of a small scale, which makes quantifying emission reductions more difficult, but also impeded by a variety of non-economic barriers. Carbon pricing can therefore be one element of a climate protection strategy, but it needs to be accompanied by domestic policies and measures (PAMs) that help to remove non-economic barriers.

# 4 JI and Domestic Emissions Trading Systems

For developing countries, much of the discussion about the future of the CDM currently revolves around the establishment of sectoral approaches (e.g. Figueres 2005; Baron and Ellis 2006; Sterk and Wittneben 2006). For industrialised countries, sectoral approaches are in fact already being implemented in the form of domestic emission trading systems such as the EU ETS. When establishing a domestic ETS, a government basically sets a sectoral target for the covered sectors and then devolves this target to the covered installations. While the EU was a frontrunner, systems have also been established in Norway and Switzerland and are being seriously considered in almost all other Annex I countries except for the Ukraine and Russia.

The parallel implementation of JI and an ETS raises the so-called double counting issue. Without regulation, a JI project affecting an installation covered by and ETS could result in a) the issuance of ERUs and b) the freeing up of ETS emission allowances, that is, the reduction would be rewarded twice. Three different types of linkages can be distinguished: projects with direct, indirect or with no linkages to a national ETS. Table 2 illustrates the three types of linkages and the regulations adopted in the EU Linking Directive to prevent double counting.

**Table 2: Types of Linkages between JI and Domestic ETS and EU Double Counting Regulations**

| Type | Description | Regulation |
|---|---|---|
| 1 | *Projects with direct links to the EU ETS.* These are project activities undertaken at installations covered by the EU ETS. For example: refurbishing or fuel switching in a power plant (above 20 megawatts). | CERs and Emission Reduction Units (ERUs) may be issued if the operator of the respective installation cancels an equal number of EU allowances. |
| 2 | *Projects with indirect links to the EU ETS.* These are project activities that have no direct link to installations covered by the EU ETS but indirectly lead to emission reductions at such installations. For example, the development of a wind park leading to the displacement of electricity from a power plant within the EU ETS. | CERs and ERUs may be issued if an equal number of EU allowances are cancelled from the national registry of the respective member state. |
| 3 | *Projects without links to the EU ETS.* These are project activities that reduce emissions at sources not connected to the EU ETS. For example, renewable energy projects that are not connected to the national grid. | These do not pose a problem and are therefore not regulated by the Linking Directive. ERUs may be issued without restriction. |

In practice, the introduction of the EU ETS has significantly constrained the applicability of JI in the EU. Type 1 projects are now unlikely to be implemented since the installation operator can derive the same financial benefit through the EU ETS and with much less transaction costs. Moreover, Type 1 comprises most of the sectors which are most accessible to emissions trading as discussed in section 3.

Type 2 projects are constrained by the size of the reserves created by EU Member States. Some Member States such as Germany have even completely prohibited the implementation of projects with any link to the EU ETS. The ongoing establishment of domestic ETS in almost all Annex I countries will further reduce the potential scope of JI.

From the environmental perspective, this is a positive development. First, comprehensive coverage is preferable to having some isolated lighthouse projects only. Second, the environmental integrity of cap-and-trade systems like the EU ETS is much superior to the integrity of baseline-and-credits systems like JI. Under a cap-and-trade system, actual emissions are traded and the participants may only emit as much as there are trading units available. Under a baseline-and-credit system, not emissions but emission reductions are traded, which are derived on the basis of a reference case of what would have happened in the future under business-as-usual conditions, which is by necessity hypothetical.

# 5 JI and Domestic Offset Projects

While discussing the establishment of domestic ETS, many Annex I countries are also discussing the introduction of domestic offset projects (DOPs). DOPs are essentially unilateral JI projects, i.e. entities implement projects in their own countries as opposed to investments from one country to another.

DOPs were for example discussed in the EU when the Linking Directive, which governs the use of CERs and ERUs, was negotiated. The main argument of proponents of DOPs is equal treatment. In their view, not only foreign but also domestic investors should be allowed to implement climate protection projects and earn ERUs (Langrock/Wiehler 2003). Nevertheless, for the time being the EU ETS does not include DOPs. However, in its proposal for revising the EU ETS directive for the time after 2012 the European Commission proposes a mechanism for issuing allowances to projects that reduce emissions outside the scope of the EU ETS (European Commission 2008). In addition, non-EU countries such as Australia, Canada and the USA are also discussing the establishment of DOPs (Sterk and Schüle 2008).

The introduction of DOPs would create a further competitor for JI, which can be expected to narrow its scale down even further. At the same time, the parallel introduction of DOPs in several countries on the basis of diverging standards would lead to a further fragmentation of the emissions trading market. Diverging standards for DOPs are especially problematic against the background of the ongoing discussions on linking the domestic emissions trading system in industrialised countries. Linking the EU ETS to another ETS which has a DOP system with its own rules would open the possibility for an inflow of trading units that result from projects which would not be allowed to take place in the EU (Sterk and Schüle 2008).

To prevent a further fragmentation of the emissions trading market and achieve a uniform international standard, it might therefore be preferable to amend the Kyoto rules to allow for unilateral JI projects instead of establishing homegrown DOP systems in almost all Annex I countries.

# 6 Development of JI Institutions

JI is currently implemented in two tracks. Which track is used depends on the extent to which the host country meets the eligibility requirements for participation in the Kyoto mechanisms. If a host country meets all of the criteria, it is entitled to verify reductions of greenhouses gases by sources and removals by sinks and issue the respective ERUs in its own right. Hence setting out the requirements for JI projects and the respective project cycle is largely left to the host countries. This is known as First Track JI. If a host country only meets minimum criteria, an international procedure for the issuance of ERUs applies. The process, known as Second Track JI, is supervised by the JISC. States that meet First Track JI eligibility requirements may also opt to go for Second Track JI (Decision 9/CMP.1).

So far, it has been expected that the First Track will become the norm for JI projects. In fact, the JISC has not had very much to do since it agreed on the details of the rules for implementing the Second Track in late 2006. So far, only three projects have been submitted to the JISC for assessment (Fenhann and Lema 2008a). If this low level of activity continues, one might consider to merge the JISC with the CDM Executive Board (EB) since maintaining an institution which stays idle is not very cost effective.

A merger could also contribute to strengthening the environmental integrity of JI. As discussed above, due to the inherent uncertainties of baseline-and-credit approaches it would be recommendable to shift from bottom-up to top-down approaches for baseline setting and the demonstration of additionality. However, while the CDM has a system for developing and approving methodologies, JI does not since JI project developers are not required to use approved methodologies. This suggests using the existing CDM capacity instead of establishing a completely new structure under the JISC.

Having one body for both mechanisms could also be expected to lead to approaches that are consistent with each other. There are certainly differences between the mechanisms and in national circumstances between developing and industrialised countries that would need to be taken into account. But the differences between Least Developed Countries and emerging economies are equally significant. A combined approach would therefore probably not entail a greater risk that inappropriate one size fits all methodologies would be developed than the current CDM.

# 7 JI and the Overall Post-2012 Regime

JI provides a tool for countries to attract additional foreign investment and technology transfer. As discussed above, the extent to which the mechanism will in fact be able to mobilise additional financing and technology transfer is restrained by structural limitations of the mechanism itself. Nevertheless, the continuation of JI post-2012 may play a role for achieving the approval of countries such as Russia and the Ukraine for a post-2012 agreement.

Moreover, as one of the results of the post-2012 negotiations, a number of countries which are currently not listed in Annex I may join Annex I. As Annex I members, these countries would no longer be able to host

CDM projects, as these may only take place in non-Annex I countries. Other countries may not fully join Annex I yet but assume binding targets for certain sectors of their economies. Projects in these sectors would also have to function according to the basic mechanism of JI whereby the credits issued are deducted from the emissions budget of the host country.

Continuing JI post-2012 would therefore reassure these countries that they could still host projects if they want. Retaining JI after 2012 would also allow to convert projects in such countries that started under the CDM into JI projects. This conversion would probably be easier if the JISC was merged with the CDM Executive Board as discussed above.

# 8 Summary and Recommendations

## 8.1 Assessment and Future Outlook of JI

Since the implementation of JI is starting only now, an assessment in how far the mechanism actually achieves its aims cannot yet be made. However, lessons can be learned from its twin mechanism, the CDM, which has had ambivalent results. On the one hand, it has mobilised thousands of projects and billions of investments in a very short timeframe. On the other hand, the CDM experience also highlights that baseline-and-credit project mechanisms have a number of weaknesses. The incentive for low-emission investments they actually provide is limited by the need to prefinance projects, very high transaction costs, the revenue risks inherent to a market-based approach and low prices. Whole sectors such as buildings and transport have so far hardly been reached by the instrument. As to environmental integrity, there have been strong doubts about the additionality of many projects that have already been registered. Moreover, additionality testing is based on assumptions about what would have happened in the future under business as usual conditions, which is by definition hypothetical.

Discussions about the further development of emissions trading after 2012 should be guided by an understanding of how emission reduction options are structured and who are the actors that would need to make investment decisions. Reduction options at large installations in the energy and industry sectors can be tapped into relatively easily by emissions trading. By contrast, other reduction activities for example in the renewable energy, buildings and transport sectors are not only often decentralised and of a small scale, which makes quantifying emission reductions more difficult, but also impeded by a variety of non-economic barriers. Carbon pricing can therefore be one element of a climate protection strategy, but it needs to be accompanied by domestic PAMs that help to remove non-economic barriers.

For developing countries, much of the discussion about the future of the CDM currently revolves around the establishment of sectoral approaches. For industrialised countries, sectoral approaches are already being implemented in the form of domestic emission trading systems such as the EU ETS. Since it covers most of the sectors which are most accessible to emissions trading the introduction of the EU ETS has significantly constrained the applicability of JI in the EU. The ongoing establishment of domestic ETS in almost all Annex I countries will further reduce the potential scope of JI.

Nevertheless, there will still be sectors which will not be covered by domestic ETS and could thus provide room for projects. In fact, while discussing the establishment of domestic ETS, many Annex I countries are also discussing the introduction of DOPs. This would create a further competitor for JI, which can be expected to narrow its scale down even further. At the same time, the parallel introduction of DOPs in several countries on the basis of diverging standards would lead to a further fragmentation of the emissions trading market.

Despite all these limitations, the continuation of JI post-2012 may play a role for achieving approval of countries such as Russia and the Ukraine for a post-2012 agreement. Moreover, as one of the results of the post-2012 negotiations, a number of countries which are currently not listed in Annex I may join Annex I. Other countries may not fully join Annex I yet but assume binding targets for certain sectors of their economies. Continuing JI post-2012 would reassure these countries that they could still host projects if they want. Retaining JI after 2012 would also allow to convert projects in such countries that started under the CDM into JI projects.

## 8.2 Recommendations for JI Post-2012

Based on the analysis in this paper, the following recommendations for the future development of JI can be derived.

**Work towards Comprehensive Coverage of Emissions through Cap-and-Trade Systems**

From the environmental perspective, company-based cap-and-trade systems such as the EU ETS are highly preferable to baseline-and-credit systems like JI. First, comprehensive coverage is preferable to having some isolated lighthouse projects only. Second, the environmental integrity of cap-and-trade systems is much superior to the integrity of baseline-and-credits systems. It would therefore be recommendable if all Annex I countries introduced domestic ETS.

**Allow Unilateral JI**

For the sectors not covered by domestic ETS, there is currently a prospect that most industrialised countries will establish their own DOP systems based on diverging standards. To prevent a further fragmentation of the emissions trading market and achieve a uniform international standard, it might therefore be preferable to amend the Kyoto rules to allow for unilateral JI projects instead.

**Consider Merging the Joint Implementation Supervisory Committee with the CDM Executive Board**

If the current low level of activity at the JISC continues, one might consider to merge it with the CDM Executive Board. This could also contribute to strengthening the environmental integrity of JI. Due to the inherent uncertainties of baseline-and-credit approaches it would be recommendable to shift from bottom-up to top-down approaches for baseline setting and the demonstration of additionality. However, while the CDM has a system for developing and approving methodologies, JI does not since JI project developers are not required to use approved methodologies. This suggests using the existing CDM capacity for this task instead of establishing a completely new structure under the JISC.

Having one body for both mechanisms could also be expected to lead to approaches that are consistent with each other. There are certainly differences between the mechanisms and in national circumstances between developing and industrialised countries that would need to be taken into account. But the differences between Least Developed Countries and emerging economies are equally significant. A combined approach would therefore probably not entail a greater risk that inappropriate one size fits all methodologies would be developed than the current CDM.

Merging the JISC and the EB would probably also make it easier to convert ongoing CDM into JI projects if some countries that are currently not in Annex I join Annex I or assume binding sectoral targets post-2012.

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**The positions expressed in this policy paper are strictly those of the author and represent neither the opinion of the Wuppertal Institute nor of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.**

**Contact:**
**Wolfgang Sterk**
**Tel. +49-(0)202 2492-149 (-129 Secretariat)**
**Email**
**wolfgang.sterk@wupperinst.org**

**Wuppertal Institute for Climate, Environment and Energy GmbH**
**Döppersberg 19 - 42103 Wuppertal - Germany**

**The Wuppertal Institute is carrying out the project „JIKO Development Phase 2007 – 2009“ on behalf of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.**

**Internet**

**German:**

**www.jiko-bmu.de**

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