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# RUSSIAN GAS PIPELINE PROJECTS UNDER TRACK 2: CASE STUDY OF THE DOMINANT PROJECT TYPE

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**More than half of the Russian JI project portfolio consists of projects for refurbishing gas distribution pipelines. Some of these are very large – up to 25 Mt in the case of the Stavropol project. Together they offer a very interesting potential for emission reductions and joint implementation. They do, however, involve complicated issues related to baseline setting and additionality.**

The paper is based on interviews with various stakeholders, project developers active in Russia and experts on joint implementation (JI), as well as on a review of the relevant literature and project documentation. We focus on the following questions:

- What is the institutional structure of the control of Russian gas distribution pipelines?
- How is the additionality of the projects defined?
- What are the main arguments used to justify their additionality?
- What are the main arguments against justification of their additionality?

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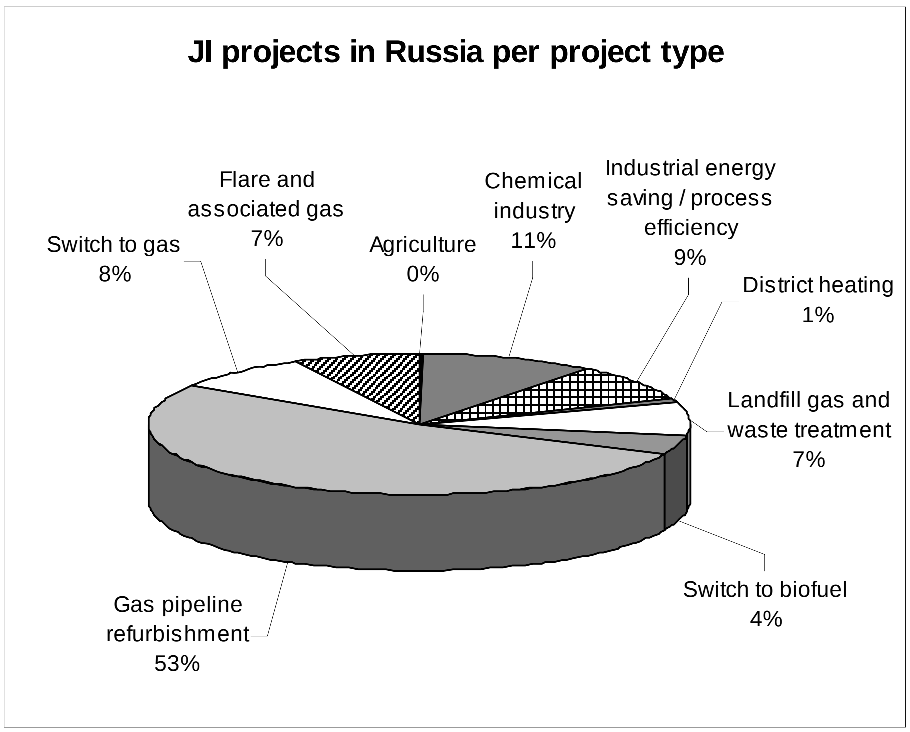
**Gas pipeline projects dominate the Russian portfolio**

Of the Russian JI project portfolio submitted to the JI Supervisory Committee (JISC) under Track 2, 53% or 58.7 Mt involve refurbishment projects for gas distribution pipelines. As illustrated in Graph 1, all the other project types are much smaller in terms of the emission reductions they are projected to yield. The dominant position of gas pipeline projects can be partly explained by the high global warming potential of methane, which multiplies the volume of emissions reduced by 21 compared to carbon dioxide (IPCC, 1996, p.22).




Graph 1 Russian JI project portfolio by project type end January 2008

As shown in Table 1, some of the projects are very large, especially the Stavropol project, slated to provide a reduction of 25 Mt during the first commitment period. This is over 40% of the total emission reductions from this project type, and some 22% of the total of the Russian JI project portfolio.

| # | Location | Reduction Mt |
|---|---|---|
| 0003 | Bryansk | 4.5 |
| 0004 | Kostroma | 0.5 |
| 0014 | Kursk | 1.2 |
| 0015 | Tula | 4.0 |
| 0017 | Stavropol | 25.0 |
| 0019 | Belgorod | 4.9 |
| 0020 | Orel | 1.8 |
| 0057 | Nevinnomyssk | 0.7 |
| 0058 | Rostov | 3.9 |
| 0059 | Volgograd | 3.7 |
| 0060 | Volodga | 0.3 |
| 0070 | Tomsk | 0.2 |
| 0071 | Yaroslav | 0.7 |
| 0082 | Tver | 1.6 |
| 0083 | Ryazan | 2.8 |
| 0084 | Kaluga | 0.8 |
| 0094 | Novgorod | 0.9 |
| 0095 | Pskov | 0.7 |
| 0096 | Saratov | 0.7 |
| **TOTAL** | | **58.9** |

Table 1 Summary of the gas pipeline projects in Russia as of February 2008.

Source of data: www.unfccc.int

Further, projected emission reductions from the Stavropol project are equivalent to some 35% of the total emissions of Sweden or almost half those of Norway in 2003 (Ministry of Sustainable Development of Sweden, 2005, p.11; Norwegian Ministry of Environment, 2005, p.12). Other gas pipeline projects are large as well: 6 of the 19 projects are calculated to yield emissions reductions in excess of 3.5 Mt during the first commitment period.

**Technical context of gas pipeline projects and the baseline issue**

Gas pipeline refurbishment projects reduce the emissions of methane caused by leaks of natural gas from the low-pressure pipelines which are used to distribute the gas delivered by high-pressure trunk pipeline from the gas field. The proposed JI projects first identify and measure the leakages of methane from the gas pipelines at all regulator and pressure reduction stations; second, leakages are repaired with modern sealants; and third, the projects continue to monitor pipeline leakage and to repair any leakages detected. Main technologies employed are a modern leakage detector (Heath Hi-Low Sampler) and the Gore-Tex Joint Sealant, which is used for repairing the pipelines instead of the asbestos traditionally used for this purpose (PDD #0003).

Official estimates of the general level of losses during transport[3] amount to 0.6% of the volume of gas (PDD #0003, p.12); this is also the maximum allowable loss as established by the Russian

[3] Both distribution and transmission

government (Federal Tariff Service, 2005). Estimates of leakages are often confused with figures for the industry's own combustion of gas – which are substantial, due especially to gas-powered compressor stations, and together comprise about 10 per cent of gas production.

There exist hardly any data on the historical trends of leakages from the low-pressure gas distribution pipelines due to the lack of comprehensive measurement programmes (IEA, 2006, pp. 46-48). The IEA (2006, p.47) estimated the leakage in the distribution system to be 5.3 bcm in 2004 (and 6.2 bcm in compressor and trunk pipelines). Since this involves venting of methane, these figures represent very high greenhouse gas emissions 80 and 93 Mt of CO2e, respectively.

It is reported that distribution companies have made very few investments for maintenance, due to their financial difficulties in the 1990s (IEA, 2002, p.126). As neither the gas distribution companies nor the regulating agencies have data available on the real volumes of gas leakage, pollution tax is paid only for the 0.6% share. The gas distribution companies are reimbursed for the tax paid by the gas supplied, and the costs are passed on to the end-users.

Based on the data provided in the PDDs,[4] the various pipelines have very different leakage rates. Compared to the IEA average figure of 3.2% (IEA, 2006, p.126), the detected leaks account for a lower share of gas transmitted than expected. However, it is significant that with 4.9% leakage the giant Stavropol project has a much higher leakage rate than most of the other projects, and even higher than the IEA average figures. (See Table 2.) It is known that the pipelines in this region are older than average. It has also been alleged by some industry representatives that in individual cases gas reported as leaked in reality has been diverted, i.e. stolen.

A methodology, AM0023 *Leak reduction from natural gas pipeline compressor or gate stations*, was developed for gas leakage projects and approved by the CDM Executive Board. This brings down the cost of implementing these projects. However, the methodology was challenged by one of the two desk studies conducted during the CDM Executive Board approval process. The main criticism was that this methodology provides a perverse incentive to gas distributors not to

[4] The PDDs provide the total annual throughput of gas and the amount of gas saved by the project. As the assumption is that the project would fix all leaks completely, these figures should reflect the share of gas loss as assumed by the baseline.

maintain and update their gas pipelines in order to gain credits (Grütter, 2005).

| Project | % |
|---|---|
| #0003 | 2.2 |
| #0004 | 0.2 |
| #0014 | 0.9 |
| #0015 | 1.6 |
| #0017 | 4.9 |
| #0019 | 2.0 |
| #0020 | 1.6 |
| #0057 | 1.7 |
| #0058 | 3.2 |
| #0059 | 0.9 |
| #0060 | 0.8 |
| #0070 | 0.2 |
| #0072 | 0.3 |
| #0082 | 1.2 |
| #0083 | 1.4 |
| #0084 | 0.9 |
| #0094 | 2.1 |
| #0095 | 1.6 |
| #0096 | 0.4 |
| **Average** | **1.5** |
| **IEA average** | **3.2** |

Table 2. Leaks from gas pipelines

Source data: PDDs available at www.unfccc.int, IEA 2006, p.126.

The Russian Industry standard 153-39.3-051-2003 introduces an obligation of frequent maintenance work in the pipeline system. The PDDs argue, however, that the required frequency of maintenance is not always met due to the lack of resources, and that the repair techniques provide short-term benefits only. But one interviewee said that at least in one potential host region the maintenance work seemed up-to-date.

Indeed, neglect of maintenance could lead to an increased leakage of gas from the pipeline network over time, and, in the absence of historical data, this could go unnoticed. The IEA (2006, p. 134) suggests that companies could act in this way to maximize their carbon revenues, since much of the information required can be regarded as 'asymmetric' i.e. non-transparent.

The desk study also argued that saving gas makes economic sense and hence this type of projects should not be categorized as additional (Grütter, 2005). Russian gas pipeline projects have also been criticized for not providing economic information to demonstrate the additionality of the project from a financial perspective (Piani, 2006).

### Organization of gas distribution

Gazprom is often referred to as the Russian gas monopoly. Its formal monopoly 'only' includes transmission of gas in trunk pipelines and exports, however. In addition, the company dominates the extraction of gas (some 85%). Gazprom has played a lesser role in distribution of gas and supplies to the final customer. In Soviet times, gas distribution and the regional pipeline systems were organised under the Ministry of Housing and Communal Affairs, i.e. separate from the Gas Ministry, the predecessor to Gazprom. After the break-up of the Soviet system, distribution networks were re-organized into region- or city-wide joint stock companies, so-called *oblgazy* or *gorgazy*. The ownership structure in the various companies differed, but the general picture was that initially about 50% was owned by the Ministry for State Property and regional and local administrations and 50% was held by employees. The latter part was soon bought up by private companies (Pravosudov, 2007). Many organizations were split up. Technical cooperation and coordination continued to a varying degree under the umbrella organization Rosgazifikatsiya, organized as a government-dominated joint stock company, based on the former production association with the same name and subsequent transmutations 1988-1992. Rosgazifikatsiya also came to represent the state share in the board of directors in many of the distribution organizations (Rosgazifikatsiya website), but does not own shares itself in the distribution companies. On the contrary, the distribution companies have shares in Rosgazifikatsiya, which refers to itself as an "upside-down holding".

The regional distribution organizations bought the gas from Gazprom and sold it on to the consumers. The networks were, however, perennially under-financed and the non-payment crisis in the mid-1990s created huge problems. Consumers did not pay their bills and, as a result, the networks could not pay Gazprom, which supplied the gas to the network (Stern, 2005, p.38). Turning off the taps of non-paying consumers was both technically and politically difficult, and the networks became heavily indebted to Gazprom. Gazprom responded by increasingly supplying large end-consumers directly, wherever technically possible, but also by changing the contractual arrangements. The final consumers were increasingly required to pay Gazprom directly for the gas, whereas Gazprom paid the regional networks a fee for their distribution services. Thus the distribution organizations stopped buying and selling gas – they became only transporters and distributors of gas, paid according to a set tariff.

In this way, Gazprom acquired greater control over the financial flows. But this development did not improve the financial situation of the networks, as the tariff was not high enough to make gas distribution profitable for them.

Gradually Gazprom started to buy shares in the network companies, as well as swapping shares for debt. Initially this process was decentralized – shares were taken over by the Gazprom daughter organizations directly affected, typically transmission organizations.[5] In 2004 these shares were collected in one holding organized under Gazprom's domestic sales organization Mezhregiongaz. One argument for the new holding – named Gazpromregiongaz - was that the Gazprom subsidiaries that had incidentally come to hold shares in the distribution networks were not always interested in that part of the business, whereas 'for those who are working with this professionally, low-pressure networks can give a good income'[6].

As of 2007, regional distribution organizations numbered about 300 in all. Gazpromregiongaz had holdings in 197 of these, with the state, through the state property service, holding direct shares in another 68 organizations. It has been proposed to let Gazprom – through Gazpromregiongaz take over these shares, and also swallow Rosgazifikatsiya. But it is not certain that this will happen. In total 300 bcm of gas is delivered through the regional organizations, via 460,000 km of pipelines. The total volume of gas distributed through Gazprom-controlled organizations in 2007 was 180 bcm (Rosgazifikatsiya website).

## Additionality[7]

Additionality is a requirement for JI projects, as the Kyoto Protocol states: *'Any such [JI] project provides a reduction in emissions by sources, or an enhancement of removals by sinks, that is additional to any that would otherwise occur'*. Additionality may appear to be a simple concept, but in practice it is difficult to specify what would have happened if the JI project in question had not been implemented. Some projects which are regarded as additional might have materialized in any case, but the sales of ERUs could have provided the incentive to implement the project *earlier* than business as usual. But how is it possible to determine when a project would have been carried out without the contribution of JI? In other words, when would emission reductions become *non*-additional?

[5] Various parts of the trunk pipeline system are operated by separate transmission organisations.
[6] General Director Sergey Shilov, Gazpromregiongaz, quoted in Pravosudov, op. cit.

[7] A wider discussion concerning the requirement of additionality under Track 1 and beyond 2012 is ongoing, however, these issues are out of the scope of this paper which focuses on Track 2 projects only.

Lazarus (2003) argues that additionality assessment is inherently subjective. Various analysts have called for more objective, transparent and rigorous standards for baseline setting and additionality definition (IETA 2005, p.6; Michaelowa, 2005, pp.89). The CDM Executive Board has developed an additionality tool which establishes acceptable ways of claiming additionality. These include investment analysis, barriers analysis and common practice analysis (EB29). The additionality test has not been regarded as foolproof, since project partners can overstate the barriers or manipulate the figures to make a project look additional (Michaelowa, 2005, pp.8-9). Also the UNFCCC has recognized the problem as the CDM Executive Board (EB website) maintains a continuous process to improve the Additionality Tool.

Some project developers interviewed hold that a PDD consists of the 'science' of baseline and the 'art' of additionality. Trexler and Broekhoff (2006, p. 37) have argued that there is no technically 'correct' additionality test. They regard the definition of additionality as a task for the policy-makers based on their policy objectives as it influences the price of credits and the magnitude of the supply pool. It was also argued in the interviews that the additionality rules and tests would work better in an established market economy than in a transition economy where the rules of the game remain unclear and where personal relations or practices from the previous economic system can have a significant impact on decision-making.

ERUs are converted from the AAUs of the host country. When the ERUs are transferred to another country's account, the Kyoto cap of the seller country is reduced. But at the same time, an additional JI project generates emission reductions which free some allowances in the national account, and the amount of unused allowances ('hot air') remains the same. This would be the case in Russia. If the project is not additional, no allowances are freed on the national account to replace those transferred, and as a rule, the reduction comes from the share of the allowances which can be defined as 'hot air'.

The importance of additionality in the Clean Development Mechanism (CDM) has been used as a comparison. Developing countries have no commitments under Kyoto, so their emissions are not included under the Kyoto cap. As a result, Credited Emission Reductions (CERs) created by the CDM projects add to the Kyoto cap, since the equivalent amount of emissions has been reduced somewhere else. Should a CDM project not be additional, then total emissions to the global atmosphere would increase, as the emission under the Kyoto cap would not be genuinely offset. From this perspective, additionality under JI may seem less relevant as the described 'leakage' would not be possible.

Some project developers are also skeptical to the concept of additionality because under Track 1 JI there will be no third-party control of the link between the ERUs generated and allowances transferred. As a result, JI might actually turn out to be more like emissions trading under Track 1. In the case of Russia and Ukraine, this could be regarded as trading 'hot air'.[8]

**The case for and against additionality in the gas pipeline projects**

There are many possibilities for reducing leakages from distribution networks (see e.g. IEA 2006, p.127). Since repairing pipelines entails not only cutting emissions of greenhouse gases, but also reducing losses of a valuable product, natural gas, one would expect that the value of gas saved would make many repairs profitable.

Over the first commitment period, the case projects save 3.6 billion $m^3$ of natural gas. The price of this gas in Europe would be at least some \$230 per 1,000 $m^3$ (in 2007),[9] which would generate a revenue of \$825 Mln or €566 Mln. Using the price on the domestic market to industrial consumers per 2008 (see below) would provide revenues of \$252 Mln or €173 Mln.

The estimated prices of emission reductions per ton of CO2e from the gas distribution pipeline refurbishment projects could be used as a rough estimate of the costs of gas savings. According to Sasyuk (2007), the prices of such projects in Ukraine are some €2.5 per ton of CO2e, although one project developer interviewed quoted the figure of €1 per ton of CO2e. The IEA reports even a lower figure, €0.49 per ton, from the Kaliningrad project (IEA, 2006, p.123). Using these figures, the cost of the implementation of the current gas projects would be in the range of €29 to 147 Mln.[10] This calculation translates into €8-50 per 1000 $m^3$ of natural gas. Based on these figures, it appears that the abatement cost can be much lower than the domestic price of natural gas, not to speak of the export price. If conserved gas were exported it would generate revenues of some €419-537 Mln when the refurbishment cost is deducted, based on the quoted range of abatement costs. The *profits* would be

[8] It should also be noted, however, that trading 'hot air' is legitimate under Kyoto, as these surplus allowances are included under the Kyoto cap. But some potential buyers or importing countries may have apprehensions.

[9] Whitmore, 2006

[10] 58,726,687 t $CO^2e$*€0.49= €28,776,077 and 58,726,687t $CO^2e$*€2.5=€146,816,710

smaller though, after deduction of transport costs and export taxes.

Further, the potential profits from the sales of the saved gas could be compared with the expected profits from the sales of the ERUs in order to establish which option seems more favourable. Based on the quoted abatement costs, the profits from selling the ERUs at €10 per ton would be some €440-558 Mln. This makes the gain from saving the gas and exporting it roughly comparable with the value of the ERUs generated. The value of the ERUs is much higher than the value of the conserved gas on the domestic market.

All in all, such a macro-perspective on the economics of the refurbishment projects seems to indicate that they are non-additional. But this reasoning presupposes that the value of the saved gas accrues to the entity that has to pay for the repair. This is why the organizational issue is so important when discussing the additionality requirement.

As noted, the distribution organization is paid a fee for the transmission of gas through its system, based on volume. If gas is conserved, the transmission organization does not have the possibility to resell that gas. Indeed, it could lose money if supplies were cut back accordingly.

This is an important argument for the additionality of distribution pipeline refurbishment projects. The distribution company simply has no economic benefit from the gas that is saved if such a project is implemented. The only direct economic benefit is derived from the sale of ERUs. Thus it can be argued that these projects are 'pure' carbon reduction projects. There are also important local benefits, especially reduced risks of fires and explosions. They are difficult to calculate, though, and in any case the companies argue that they lack the funds to improve the pipelines.

But even if the distribution companies are indifferent to saving gas, somebody acquires the conserved volumes: either the supplier of the gas to the distribution networks, namely Gazprom, or the final consumers. One might think it is the former, since it is Gazprom that actually sells the gas to the consumers. If the JI projects mean that less gas has to be pumped through the distribution companies, then Gazprom can sell this gas elsewhere and earn money.

Based on this reasoning, one would expect Gazprom to take an increasing interest in conservation measures in gas distribution as the gas price rises. And in fact already in 2001 Gazprom identified a series of measures that could mitigate GHG emissions from the gas distribution sector at a cost of less than $ 17 per $1000m^3$ at the time (IEA, 2006, p.126).

Even where gas distribution companies remain independent, one would expect Gazprom to take an active interest in their operations. But with Gazprom's expansion into gas distribution, the institutional barriers between the gas company and the distributors are broken down at the corporate level. If JI refurbishment projects were carried out in Gazprom-owned distribution companies, the corporation could gain from both selling the saved gas *and* the sales of the ERUs. Under these circumstances one would think it would be difficult to argue for the additionality of a project. In fact projects in Gazprom owned organisations are included in the list of projects, notably Bryanskoblgaz. However, implications of the corporate ownership are not discussed in the PDD.

The configuration of interests is not as evident in practice, however. Technical peculiarities play a role here. The gas Gazprom sends into the distribution network should in principle be metered and paid for accordingly. (This is not the case everywhere yet, although the situation is gradually remedied). At the other end of the distribution system, where the gas is delivered to the final consumer, metering is very often lacking or not very accurate. The consumption of gas is more often than not just calculated according to a set of parameters. And the total amount delivered from the distribution organisation equals the supplies from Gazprom – minus the calculated losses – 0.6%. Thus, it is in fact the final consumers who pay for losses exceeding this level. If Gazprom should want to reclaim this gas after introducing conservation measures in the distribution system, the final consumers might well argue that they should be compensated in the form of lower gas bills. Alternatively they might argue that they should receive the conserved gas themselves, since they are already paying for it.[11] This reasoning shows that the calculation – from Gazprom's point of view - is not as simple as one might think.

Thus, it is perhaps not so strange that Gazprom's practical efforts to realise the potential identified are not so clear. Independent gas distributors maintain that they have not noted any such interest from Gazprom.

More generally there is little indication that Gazprom works according to marginal cost/ benefit calculations. It has been proved that there are many efficiency measures that could be

[11] Since the conserved gas would be distributed among a large number of customers the individual gains would be small and not enough to make customers go together and pay for pipeline refurbishment themselves, something which could have been a logical, but theoretical, solution.

introduced in Gazprom's system that would pay for themselves in a short time if export prices were applied.[12] Such prices are not commonly applied, however, for several reasons. First of all, Gazprom is a vast system with enormous gas flows. There is no mechanism that allows marginal efficiency gains to be translated into investments in such gains. It is also important not to underestimate the inertia of huge systems like the Russian gas industry, and a general point is that there is an endless list of investments that could be made to increase efficiency in the Russian economy. Each project in itself may seem an obvious case, but the total volume meets financial and decision-making barriers.

Moreover, Gazprom makes extensive use of internal transfer prices. This means that the price which the relevant Gazprom transmission organization pays for the gas that it transports and then pumps into the distribution network is much lower than the export price. Thus, even if Gazprom had a system for factoring in conservation gains, the proper measure would not be the export price, but a far lower domestic price.

The calculated average price for industry in 2008 is 1690 rubles per 1000m³ and 1290 rubles for households (exclusive of VAT), corresponding to approximately $70 and $53 respectively (FST Russia). If the still quite low domestic price is applied, many refurbishment projects may be uneconomical, even on paper. In other words, the projects cannot be justified without additional incentives.

However, Russian domestic gas prices have been increasing significantly the last few years. In 2007 they rose by 15%, and from 2008 a further 25% (BBC 4 December 2007). The official plan is to reach a level in 2011 where profitability of exports and deliveries to the domestic market is the same (adjusted for extra transportation costs and export taxes etc.) (FST Russia). Should this plan be implemented, one would expect that incentives for conservation measures would gradually be strengthened.

But the main problem seems to be that there are institutional barriers that prevent economically optimal behaviour. This of course may have consequences for additionality. As hardly any economy works fully according to economic theory, the question is how serious these

[12] In Gazprom's own energy conservation programme 11.6 bcm of natural gas was saved in the period 2002-2005. Similar volumes were planned for 2007-2010, with 'minimal financial expenditures', mostly in the trunk pipeline system. Even if specific cost data are not offered, it is obvious that the measures proposed have not been evaluated against an export shadow price. "Management committee reviews Gazprom energy saving and environmental activities", 25 December 2006. http://www.gazprom.ru/eng/news/2006/12/22099.shtml

barriers are in the relation to the proposed projects. The fact that projects that on paper seem commercially rational are not being implemented, suggests that the extra benefits of JI are required.

Should the organisational barriers in the gas sector be regarded as long-term or something that can readily be dealt with?

The main argument here is that the present institutional set-up supports the case for additionality in the pipeline refurbishment projects. Change in the set-up must be expected, but the pace of change is uncertain even if the direction is clear: a growing interest in conservation measures for purely economic reasons will sooner or later make itself felt. It is difficult to argue that the projects should be credited beyond the first commitment period, i.e. 2012.[13] At that point additionality will have to be reviewed again. And with proper calculation of opportunity costs it could become evident that the right option is not to patch these pipelines, but to replace them altogether. Of course this would require investments of another magnitude.

A further evaluation of the attractiveness of the pipeline refurbishment projects depends on the organisation of the projects themselves.

**Financial structure, baselines and additionality – interlinked elements**

The financial structure of the proposed JI projects is not disclosed, and it is difficult to understand the money flows in the projects. As there are no data on the division of the profits between the host and project developer organizations, it is impossible to assess whether these profits are likely to be used to finance further refurbishment projects in the sector. Of course, the JI framework does not prohibit large profits and it does not require disclosure of financial information, but it seems probable that it would be easier to attract serious investors if such information was available and if a substantial part of profits were reinvested in further improvements in the host organisations.

Moreover, since the additionality of these projects depends on a peculiar and transient institutional framework, some buyers of ERUs are likely to be skeptical. This could translate into lower prices for the ERUs from these projects. More transparency could help compensate for such skepticism and thus improve the market value of the ERUs.

The lack of historical data is a major shortcoming when it comes to

[13] This is not a problem in relation to the Russian procedures since they don’t accept late, or early, crediting in any case.

demonstrating the additionality of refurbishment projects for Russian gas pipelines, as leaks can vary over time. Even short-term neglect of maintenance work could in theory increase leakages to exceed the longer-term trend. It is of course the latter that should be used as the baseline in order to credit only reductions generated by the project. In the absence of historical data, projects could be credited for more reductions than they have delivered and the process of baseline data collection could be open to fraud. The JISC is yet to take a stand on these projects as the Russian government has not approved any JI projects thus far.

**Conclusion and recommendations**

The current institutional setting of the gas sector clearly creates a barrier to updating the distribution pipelines in absence of JI. But this conclusion cannot hold longer than until 2012.

The baseline issue has not been solved, but further work to find historical benchmark data on leakages from gas distribution networks in Russia could close the current gap in the certainty regarding baselines. Some improvement has taken place due to the delays in Russia's development of JI procedures (Korppoo and Moe 2007). Several networks have been revisited and new leakage data collected, forming a trend line over the last 2-3 years. But of course, all these measurements were made after the prospects of JI investments were presented and in the absence of longer term historical data it is impossible to be sure of the accuracy of the baseline regardless of the availability of an approved CDM methodology. Conservative baseline setting could be one way to take this shortcoming into account: for instance, claiming only 80% or less of the emission reductions generated based on the baseline calculation, would leave space for measurement errors. Indeed, project developers claim that they both take the measurements summertime when the gas pressure is lower and as a result leaks are smaller, as well as fix all valves whether or not they leak and only take the leaking ones into account in the baseline. Such an approach clearly adds to the conservatism of the baseline.

Given the low cost of emission reductions from gas pipeline refurbishment projects, it would be useful to add to the methodology AM0023 the requirement that financial information on the project be disclosed, in order to give a better indication of the profitability of the project. In fact, Russian gas projects could disclose such information also voluntarily, thereby adding to the transparency of their PDDs.

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