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Subject: Examples of voluntary technical approaches, designed by host Parties for their joint implementation projects that could assist the host Parties in achieving their quantified emission limitation or reduction commitments

I. Introduction

A. Background

1. This submission can be read in the context of broader discussions on the future of project mechanisms beyond 2020 of using the experiences with JI for a market mechanism (or mechanisms) which enable UNFCCC certification of mitigation outcomes subject to specific rules and requirements designed to provide for a scaling up of efforts and entailing a net contribution to global mitigation efforts and contribution to sustainable development. Such mechanisms should go "beyond offsetting". Therefore this submission entails voluntary technical approaches to achieve or overachieve the respective QELRC. However, further approaches with the aim of raising the overall ambition to reach the 2°C objective, such as the cancellation of ERUs, should also be part of the effort to go beyond offsetting.
2. Annex I Parties to the Kyoto Protocol (KP) with a commitment in Annex B have quantified emission limitation or reduction commitments (QELRCs) for a basket of greenhouse gases (GHGs). To achieve its QELRC, a Party must retire enough Kyoto units – AAUs or other eligible units, each representing one tonne of carbon dioxide equivalent ($tC_{O2}e$) – to cover its GHG emissions during the commitment period. Parties must measure and report their national GHG emissions through an annual inventory which is subject to a review by international experts. The initial Assigned Amount for each Party is denominated in Assigned Amount Units (AAUs), and eligible Parties can trade AAUs and other Kyoto units with other eligible Parties.
3. Joint Implementation (JI) is a flexible mechanism under Article 6 of the KP that generates Emission Reduction Units (ERUs), converted from the host country's AAUs or Removal Units (RMUs), that can be transferred to other eligible Parties for use towards their QELRCs.

4. Although designed as an international mechanism requiring approval by at least two Parties, JI can also be used as a tool to help the host country identify and promote domestic mitigation and thus achieve its QELRC. This mechanism could help, under specific circumstances, to harness private sector capacity and resources to achieve mitigation earlier, faster, cheaper and wider.
5. This submission presents a non-exhaustive selection of voluntary technical approaches designed to reduce emissions in a host country through JI, drawing on the diverse and inspiring experience of certain EU Member States and utilizing case studies (see Annex) to illustrate the variety of opportunities available to host countries to align their mitigation projects with both national interests and international standards through a customized combination of national and international (Track 2 JI and CDM) elements.
6. Using JI as a domestic mitigation tool is voluntary. It is a sovereign policy choice of the potential host country taking into account the positive and negative consequences of each choice.

B. Key aspects of voluntary technical approaches

7. Host countries can design various voluntary technical approaches for their JI projects to help to achieve domestic emission reductions. These technical approaches can vary across countries, projects and time. They are, by nature, country-driven and voluntary, and thereby reflect national priorities and circumstances.
8. Some EU Member States decided to use these national approaches of JI (see Annex for examples). Of course potential host countries evaluate all policy options and choose certain instruments only after careful evaluation. Depending on the specific circumstances, the use of JI , if chosen by the host country as a domestic mitigation tool , should fit into the overall mitigation strategy taking into account other policies and measures (emissions trading systems, tax measures, environmental subsidies, regulatory measures etc.). The risk of double counting is also a crucial consideration. In order to mitigate the risk of double counting within the EU ETS, the EU has legislation implementing strict rules for JI projects directly or indirectly included in the EU ETS. Considering this broader picture, some EU Member States opted for other policy tools to promote domestic mitigation.
9. Key aspects of voluntary technical approaches include how emission reductions from such activities are quantified, how they impact the national GHG inventory and how they are accounted.
10. **Quantification of emission reductions:** Technical approaches for quantifying emission reductions may differ across projects, host countries and time. The Project Design Document (PDD) describes the technical approach applied to the project in question for determining the volume of ERUs to be credited. Quantification can be based on direct measurements, modeling and/or default factors. The amount of emission reductions achieved by the project can be determined by comparing

emissions after project implementation to a **reference level (baseline)** which represents the emissions in the absence of the project. The number of ERUs credited to the project corresponds to the difference between the project emissions and the **crediting threshold** which may or may not be the equal to the reference level. If the crediting threshold is set below the reference level, the amount of the ERUs issued for the project is lower than the amount of emission reductions achieved by the project.

11. **Impact on national inventory:** The emission reductions achieved by the project may or may not be fully reflected in the national inventory, depending on whether the same technical approach (methodology) for quantifying emissions is applied at the project and inventory levels. The national inventory does not explicitly estimate emission reductions; emission reductions show up as a change (decrease) in the national emission level after project implementation (compared to a situation where the project would not have been implemented). National inventories estimate emissions at the aggregate level and do not necessarily utilize project-level data whereas JI projects typically estimate emissions at the project-level. If different approaches to estimate emissions are applied for the inventory and the project, the project's actual emission reductions may be higher or lower than the emission reductions implied by the national inventory. If the inventory is not made more precise using the project-level data, or if the established baseline is not accurate (i.e. is inflated), the inventory will contain lower emission reductions than the project-level estimation and the host country will ultimately be responsible for the discrepancy. In such a case, a JI project can make it more difficult for the host country to meet its QELRC. To avoid such situations, host countries should ensure that the emissions reductions are reflected in their inventories by aiming for methodological consistency.

12. **Accounting of emission reductions:** The conversion of AAUs to ERUs ensures that double-counting of emission reductions is avoided. As an AAU is converted into an ERU, the original AAU is not available to the host country to count towards its QELRC. Nonetheless, the ERUs which have been generated are available for compliance use by the host country or by the buyer. However, there are various ways to distribute the emission reductions:

    a) **Project owner's share:** The share of the emission reductions achieved by the JI project that are credited as ERUs by converting the host country's AAUs to ERUs. This share is available to the project owner to transfer through the international carbon markets to a buyer who, in turn, can – but does not necessarily have to – use the ERUs for compliance. To the extent that ERUs are used for compliance (i.e. to cover emissions that would otherwise have to be reduced by the compliance user), they are said to be used for "offsetting".
    b) **Host country's share:** Any share of the emission reductions achieved by the JI project that is not credited and that shows up

in the national inventory or any portion of the ERUs that are retained by the host Party. This share remains available for the host country for compliance use (i.e. to count towards its QELRC).

13. Figure 1. illustrates the cases of full and partial crediting of JI projects in an example scenario where:

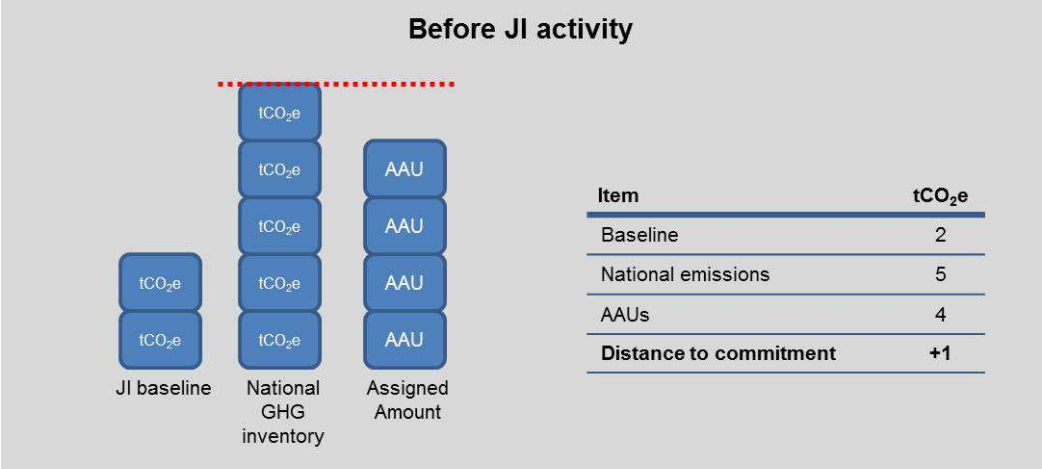
    a) the JI project reduces emissions by two units (tonnes of carbon dioxide equivalent, tCO_2e) compared to the baseline emission level;

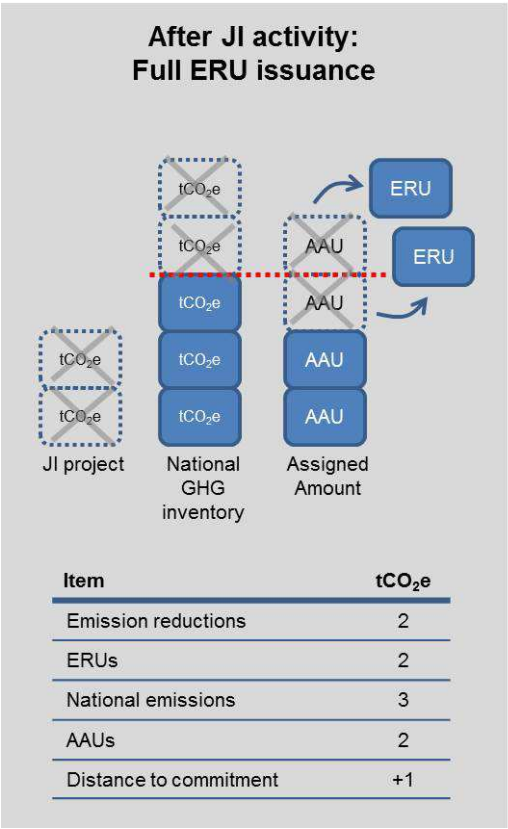
    b) the emission reductions achieved by the JI project are fully reflected in the national greenhouse gas (GHG) inventory and thus national emissions fall by two units (from five to three in this example) as a result of the JI project;

    c) the host country's Assigned Amount (AA), which reflects its QELRC, is adjusted according to the approach chosen:

        i. Full ERU issuance: The host country converts two AAUs into two ERUs and the JI project has not impact on the host country's achievement of its QELRC; and

        ii. Partial ERU issuance: The host country converts one AAU into one ERU and the JI project helps the host country to achieve its QELRC by one unit, corresponding to the emission reduction that was not converted into an ERU from an AAU.





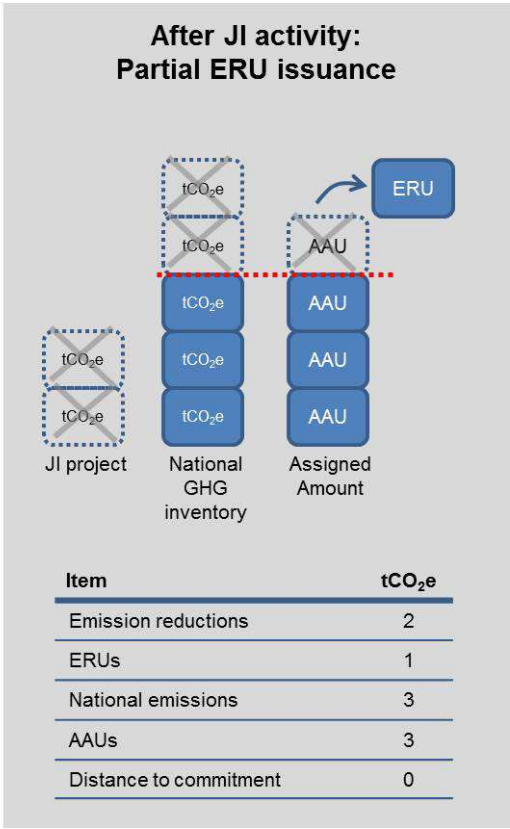


Figure 1. Full and partial ERU issuance against emission reductions from a JI project

II. Overview of national approaches to JI

14. All JI projects require host country approval, thereby mandating the host country to choose which projects to allow under JI in its territory and which JI criteria and procedures to apply. As JI host countries, they apply nationally customized combinations of national and international elements for approving JI projects and issuing ERUs against emission reductions achieved by the JI project.

15. Key steps in national JI schemes in EU host countries are largely based on the international standards and procedures for JI and CDM. In all EU host countries, the JI project cycle includes project design by the project owner; project assessment by an eligible independent auditor; project approval by the host country; monitoring and reporting of emission reductions by the project owner; verification of emissions reductions by an eligible independent auditor; and issuance of ERUs by the host country.

16. Host countries utilize international elements to varying degrees: Germany, for example, prefers its JI projects to apply methodologies approved under CDM, while France requires national approval of methodologies. France, Germany and Poland utilize auditors accredited by the JI Supervisory Committee (JISC) under national JI; The French JI programme also allows the use of auditors accredited under CDM. Sweden and Lithuania utilized Track 2 under the JI Supervisory Committee instead of specifying a national Track 1 JI procedure.

17. The scope of eligible JI projects and the split of the emission reductions between the project owner and the host country vary across countries, projects and time, depending on host country preferences and policies. It is in the interest of the host country that JI potential is generally limited to activities that are not covered by other policies, such as feed-in tariffs or the EU Emissions Trading Scheme (EU-ETS), so that emission reductions resulting from national policies count towards the host country rather than being transferred for international use. However, some host countries allow JI projects that overlap with other policies, subject to special provisions for e.g. subsidy deductions (avoiding double funding) and avoiding double counting through additional set-asides. For projects which fall directly or indirectly in the scope of the EU ETS, strict double counting rules apply. For the first commitment period, such set-asides were mandatory and for the second commitment period, ERU issuance for such projects is no longer possible.

III. Conclusions

18. This submission presents a non-exhaustive list of various technical approaches, voluntarily designed and implemented by host countries for their JI projects, that can help the host country achieve domestic mitigation earlier, faster and/or cheaper by harnessing private sector capacity and resources through such mechanism.

19. While some EU Member States refrain from using JI projects as potential domestic mitigation instrument, a non-exhaustive list of examples from those EU Member States that have opted to utilize JI as a domestic mitigation tool (see Annex) illustrate how national approaches could be customized to reflect national policies, priorities and circumstances, while making use of elements from international standards (e.g. Track 2 JI, CDM and inventory standards and procedures).

20. The technical approaches designed by host countries can make use of the mechanism's versatility to valuable functions: discovery of untapped

domestic mitigation potential and associated costs; identification and coverage of policy gaps; paving way for new policies by incentivizing mitigation before and/or beyond requirements; provision of incentives for earlier, faster, deeper, broader, more cost-effective and/or more innovative mitigation than what would otherwise happen; utilization of private sector resources and insights; promotion of a level playing field across various mitigation technologies and among national and international actors; and quantification of emission reductions.

21. The potential host country can decide to choose JI as a domestic policy tool voluntarily taking into account the positive and negative consequences of such a policy tool. The host country decides whether and how to split the achieved emission reductions between national and international use. The split can vary across countries, project types, installations and time, and it can be implemented for example through the various technical approaches presented in this submission.

22. The environmental integrity of JI, like any mechanism to promote mitigation, is safeguarded by the application of appropriate reference levels and crediting thresholds, robust MRV standards and procedures, and transparent and robust accounting. This submission has focused on the KP context of internationally binding and quantified economy-wide QELRCs and a UN system of MRV and accounting at the host country level, and UN standards for baseline setting and MRV at the JI activity level. Most of the concepts and conclusions presented in this submission are relevant also beyond the KP context, and may be of interest to any country that wishes to achieve domestic mitigation in a cost-effective manner in cooperation with its private sector. The application of these concepts in contexts that differ from the KP will nevertheless require dedicated rules, standards and procedures that safeguard environmental integrity.

Annex: Examples of voluntary technical approaches, designed by certain EU Member States for their JI projects that could assist them in achieving their QELRCs

A. Case 1: National benchmarks for JI projects reducing N_2O emissions from nitric acid production

1. **Background:** Dinitrous oxide (N_2O) is, inter alia, a by-product of industrial nitric acid production. In nitric acid plants, different N_2O requirements were in place for different plants in different EU countries, with emission factors for unregulated plants in the region of 4-9 kg N_2O per ton of nitric acid (kgN_2O/HNO_3). However, the relevant European best available technology reference document had determined a range of 1.85 to 2.5 kg N_2O per ton of nitric acid as maximum emission range using best available technology for existing installations.
2. **Technical approach:** The crediting threshold ("benchmark") is set to reflect best available technology, rather than current technology for reducing N_2O from nitric acid production. Many member states took the best available technology emission range into account in determining the maximum potential benchmark for crediting of nitric acid N_2O projects. Germany, for example, used an initial benchmark of 2.5 kg N_2O per ton of nitric acid, declining to 1.85 kg N_2O per ton of nitric acid from 2010 onwards, when further regulation for existing plants became effective in Germany. Finland, France and Belgium used the same benchmark values, but applied the more stringent value of 1.85 later than Germany. Spain applied the 2.5 kg throughout the crediting periods (2009-2012). These emission reductions achieved by reaching the less ambitious end of the emission range achievable with best available technologies counted towards the host country, while further reductions representing the more ambitious performance of best available technologies were eligible for crediting and thus transferring via international carbon markets for use in other countries. Under JI, projects achieved performance rates of 0.35-1.4 kg N_2O per ton of nitric acid, varying across time and installations. This benefit-sharing varied across time and installations also depending on the installation-specific requirements set in the environmental permit.
3. By contrast, instead of national benchmarks, various member states applied approved CDM methodologies (mainly AM0034 which is now consolidated into ACM0019, but also IPCC guidelines) for determining the baseline emission factor for their projects. These baselines reflect historical emission rates, apply a conservative approach and take into account national regulation. Under this approach, projects would help the host country achieve its QERLC only to the extent that ERUs are issued against a more conservative estimate of emission reductions than what shows up in the inventory.

Table 1. EU Member State approaches to crediting N_2O emission reductions from nitric acid production under JI

Member States applying national benchmark	Belgium, Finland, France, Germany, Spain
Benchmark emission factor (crediting threshold)	2.5 kgN_2O/HNO_3 from 2008, tightening to 1.85 kgN_2O/HNO_3 in Germany in 2010, in Finland and France in 2011 and in Belgium in 2012

4. N_2O projects have been integrated into the EU ETS scheme from 2013 onwards. Therefore, the crediting period was limited until the end of 2012. At least one Member State opted to regulate N_2O emissions under EU ETS even before 2013, instead of allowing crediting under JI. Levels for free allocation were set slightly more stringently than baselines for JI projects. This illustrates how graduation of sectors towards sectoral approaches can occur at different rates in different countries.
5. **Quantification of mitigation outcome:** The amount of ERUs issued is the difference between the benchmark and the project emissions. The total emission reductions compared to the pre-project situation, and compared to the emissions scenario without the JI project but with national regulation, may be greater than the amount of ERUs issued. The total emission reductions can be quantified if the pre-project emissions and/or environmental regulation are known. A total of 42 million ERUs were issued for 33 JI projects that reduced N_2O from nitric acid production during 2008-2012 in ten EU Member States. Total emission reductions compared to the pre-project situation and environmental regulation were higher than the amount of ERUs issued, as illustrated for the case of Finland in **Error! Reference source not found.**.

Table 2. Case study: JI projects reducing N_2O emissions from nitric acid production in Finland

Number of projects	**3**
Crediting period	**2009-2012**
Emission reductions	
Compared to pre-project (2009)	4.22 Mt
Compared to permit requirements	2.83 Mt
ERUs issued	0.97 million ERUs
Counted towards host country	3.25 Mt (1.85 Mt beyond environmental permits)
Emission factor	
Pre-project (in 2009)	9.6-6.6 kgN_2O/HNO_3 (installation-specific)
Environmental permit (from 2011)	up to 2.5 kgN_2O/HNO_3 (installation-specific)
National crediting benchmark for JI	2.5 kgN_2O/HNO_3 (2008-2010) 1.85 kgN_2O /HNO_3 (2011-2012)
Performance under JI	0.4-0.9 kgN_2O/HNO_3

6. **Impact on national inventory:** The emission reductions achieved by the project are reflected in the national inventory to the extent that the project

and the inventory use an identical technical approach (methodology) for quantifying emissions.

7. **Accounting for emission reductions:** If the crediting threshold is set below the reference level due to the stringent baseline, then only part of the emission reductions achieved by the project are credited as ERUs. The rest help the host country to achieve their commitments, to the extent that these emission reductions are reflected in the national inventory. The share of emission reductions achieved by the project corresponding to the difference between the reference level and the crediting threshold accrues to the host country through the national inventory while any emission reductions beyond the crediting threshold are issued as ERUs to the project owner through the mechanism.

8. **Evaluation:**

   a) Benchmarking allows host countries to decide the performance level which installations must achieve to start earning ERUs, thereby serving as a voluntary environmental standard.

   b) Benchmarks may be set at country-specific levels, and thus fully accounting for relevant existing national and/or sectoral policies, plans and circumstances can result in different baselines in different countries.

   c) Host country benefits through discovery of new domestic low-cost mitigation potential; achievement of domestic mitigation earlier and/or at lower cost; and implementation of best available technology standards in advance of regulation.

   d) Project owner benefits through financially attractive investment in best available technology; and generation of revenue and/or compliance cost savings associated with voluntary emission reductions before and/or beyond regulation. Ex ante uncertainty about project performance implies uncertainty of the achievable volume of emission reductions and associated revenue. The more stringent the benchmark, the narrower the scope of emission reductions and the weaker the financial incentive for investing in the best available technology.

   e) To quantify total emission reductions, additional information may be needed besides what is required to quantify ERUs in accordance with relevant standards.

B. Case 2: Discounted ERU issuance for French JI projects

9. **Background:** The French government uses JI as a mechanism to identify and incentivize domestic mitigation potential beyond domestic policies. To promote conservativeness and help France achieve its QELRC, France applies national discounting for emission reductions achieved by their JI projects.

10. **Technical approach:** A 10% discount rate is applied to all verified emission reductions upon issuance, so that only 90% of the verified

emission reductions are issued as ERUs. The 10% discount serves as a buffer to promote conservativeness and helps France to achieve its QELRC.

11. **Quantification of emission reductions:** Emission reductions are quantified using methodologies that are pre-approved under the French JI programme and serve as public reference documents available also to other project developers. The project developer can also submit the project documentation without applying a pre-approved methodology as long as necessary information is contained in the project documentation. In this case, the French JI programme administration drafts a methodology based on the project documentation.

12. **Impact on national inventory:** France requires emission reductions that are achieved by the project to be reflected in the national inventory and, when a methodology is submitted, the administration request the national inventory authority to verify whether this requirement is met.

13. **Accounting of emission reductions:** 90% of the emission reductions achieved by the projects are credited as ERUs while the remaining 10% will count towards the host country (not converted into ERUs from AAUs) and, to the extent that these emission reductions are reflected in the national inventory, will help it achieve its QELRC.

14. **Evaluation:**

    a) Discounting can be motivated by conservativeness and/or achievement of domestic mitigation and it can vary across countries, project types, installations and/or time.

    b) Host country benefits through achievement of domestic mitigation at lower cost and discovery of new domestic mitigation potential.

    c) Project owner benefits through financially attractive investments in mitigation and revenue associated with voluntary emission reductions (although discounting reduces the amount of ERUs received by the project owner and thus their ERU revenue compared to a situation with no discounting).

    d) Discounting at or after issuance enables total emission reductions to be quantified in accordance with the JI standards.

C. Case 3: Limiting crediting periods for landfill projects in new Member States

15. **Background:** When new Member States join the EU, they may, in some cases, be granted transition periods for aligning their national legislation with EU requirements. Such transition periods vary across countries. In the case of landfill gas collection, the Landfill Directive (1999/31/EC) of 26 April 1999 requires Member States to collect, treat and use or flare the landfill gas. Some new Member States pledged implementation upon accession while others negotiated transition periods for implementation. Landfill gas capture and use (or flaring) implemented prior to accession

or the implementation dates could be deemed additional to the mandatory requirements and thus eligible for crediting under JI.

16. **Technical approach:** The crediting period is limited to the period before a mitigation activity becomes mandatory. The reference scenario (serving as the crediting threshold) reflects the emissions before the entry into force of regulation until the implementation deadline for EU directives, after which it reflects the regulated emission level.

17. **Quantification of emission reductions:** Emission reductions are usually calculated based on measurement of the volume of captured gas, making use of CDM methodologies and IPCC guidance and default factors.

18. **Impact on national inventory:** The emission reductions achieved by the project may or may not be fully reflected in the national inventory, depending on whether the project and the inventory use an identical [comparable] [similar] technical approach (methodology) for quantifying emissions. The applied methodologies vary across countries and projects. If the national inventory uses a different approach to estimate emissions from landfills, the project's emission reductions may be higher or lower than the emission reductions implied by the national inventory.

19. **Accounting of emission reductions:** All emission reductions achieved by the JI project until and including the end of the transition periods were credited as ERUs, after which all further emission reductions from landfill gas capture count towards the host country (i.e. no ERUs were issued for them) and help it achieve its QELRC.

20. **Evaluation:**

    a) Limiting the crediting period to the pre-regulation period is an explicit approach to incentivizing implementation of mitigation requirements ahead of schedule. This approach is equivalent to a baseline that reflects the implementation of the regulation and eliminates emission reduction potential after the regulation's implementation date.

    b) Accounting for the transition and implementation schedule can result in different baselines in different countries.

    c) Host country benefits through achievement of earlier mitigation action and earlier implementation of forthcoming regulation.

    d) Project owner benefits through financially attractive investment in mitigation technology and generation of revenue and/or compliance cost savings associated with voluntary emission reductions before and/or beyond regulation.

D. Case 4: Domestic emission reduction projects

21. **Background:** Certain EU Member States have considered and piloted the use of a purely domestic emission reduction mechanism, based on JI, whereby emission reductions achieved by these projects count towards the host country and help them achieve their QELRC. The

Danish domestic reduction mechanism identified two pilot emission reduction projects during 2011-2013 in an effort to assess domestic mitigation potential in non-regulated sectors. The Spanish Carbon Fund for a Sustainable Economy (FES-CO_2) was launched in 2012 to contribute to the fulfillment of Spanish international emissions reduction commitments and to catalyze the transition to a low carbon, sustainable and green economy. To date, FES-CO_2 has identified over 100 domestic emission reduction projects, and tendering for new projects will continue in 2015. The first verifications and payments took place in 2013 and continued in 2014.

22. **Technical approach:** The host country prepares criteria and standards, and assesses and selects domestic emission reductions projects that will achieve emission reductions on behalf of the host country. The host country can customize criteria, standards and procedures in accordance with its national priorities and circumstances. It can choose to count all or part of the emission reductions and apply a payment structure which may or may not be market-based. For example, the selection criteria under both the Danish and Spanish schemes included mitigation potential, cost-efficiency and additionality. Only projects that reduce emissions outside the EU Emissions Trading Scheme, such as in the agriculture, transport, building and waste sectors, are eligible.

23. **Quantification of emission reductions:** In the Danish and Spanish schemes, the methodologies to quantify emission reductions from projects are developed and/or approved by the national authorities, and aligned with the methodologies applied in national inventories to ensure that the emission reductions showed up in the national inventory. Under the Spanish scheme, emission reductions are monitored in accordance with methodologies developed and/or approved by FES-CO_2 and verified by Independent Entities recognized by FES-CO_2 in accordance with a Verification Manual prepared by FES-CO_2. FES-CO_2 has developed and published 10 methodologies, and also accepts proposals for new methodologies for its consideration.

24. **Impact on national inventory:** Under the Danish and Spanish schemes, the applied approaches to quantifying emission reductions aims to ensure that the projects' emission reductions are fully reflected in the national inventory.

25. **Accounting of emission reductions:** Under the Danish pilot, the Danish government committed to purchasing a fixed amount of emission reductions achieved by the selected projects by 2015. Under the Spanish scheme, the government pays for the verified emission reductions generated by selected projects during the first four years. Any further emission reductions generated by the projects would accrue to the Danish and Spanish governments for free. All emission reductions achieved by the projects count towards the host country and help it to achieve its QELRC.

26. Evaluation:

a) Using JI as a domestic mitigation tool could potentially enable host countries to, inter alia, uncover and assess domestic mitigation potential and associated costs; identify and cover gaps in national policy; promote innovation; and promote cost-effective domestic mitigation. Using JI as a domestic mitigation tool is a de facto results-based subsidy for eligible private sector entities. To avoid double-support, JI has been used by certain EU Member States mainly to cover policy gaps (i.e. limiting eligibility to activities that are not covered by other policies such as the EU ETS). If companies get credited for their climate-friendly policy under JI, double counting of the resulting ERUs with any Emissions Trading Scheme must be excluded. If the resulting ERUs are sold to other market participants, the reduction benefits are only beneficial for the mitigation goal of the host country as far as approaches such as those outlined in this submission are applied.

b) Project owner's benefit through financially attractive investment in mitigation technology and generation of revenue associated with voluntary emission reductions beyond regulation.