

Good Practices of Technology Needs Assessments

By Wytze van der Gaast*

Recently, the UNFCCC secretariat prepared a report on Good Practices of Technology Needs Assessments (TNAs) in collaboration with UNEP DTU. The report describes experiences with TNAs conducted in 36 countries between 2009 and 2013. It presents good practice lessons for organising and conducting the step-wise TNA process, as well as for preparing a successful implementation of prioritised technologies for mitigation and adaptation. It provides recommendations for improving the TNA process and for enhancing implementation of TNA results. The report is an evolving document, reflecting the development of TNAs.

What is a TNA?

A TNA is a set of country-driven, participatory activities leading to the identification, prioritisation and implementation of environmentally sound technologies for climate change mitigation and adaptation. TNAs are linked to a country's development priorities and selected technologies are those with the highest expected combined development and climate benefits. For prioritised technologies Technology Action Plans and project ideas are prepared. The TNA deliverables are shown in Figure 1.

Organising the TNA process

A TNA generally takes around 24 months to be completed, which requires a solid organisation structure and commitment to the process by participants in the project team. The decision on the leadership of a TNA is an important step. Most TNAs have been co-ordinated by representatives of

ministries which are closely related to climate change topics, such as the Ministry of Environment. An alternative option for leadership, as seen in some TNAs, is to form an interministerial committee.

Important factors contributing to the success of a TNA and implementation of its results are: (a) the existence of a climate change strategy in a country and how it has been institutionalised, and (b) the extent to which a TNA has been linked to a country's national strategic planning processes. The latter implies that a TNA should also involve ministries which are responsible for national development planning processes (e.g. Ministry of Economic Affairs or Finance) and that the process should be receptive to their inputs. At its ninth meeting, the Technology Executive Committee (TEC9)¹ suggested that the scope of TNAs may be extended to sub-national levels or regions.

It is important that TNAs are participatory, so that needs and preferences of stakeholder groups inform the TNA decision making process. This can lead to transfer of new knowledge and insights on specific technology challenges and opportunities that might otherwise have been missed. It may also enhance the implementation of findings from the TNA process. It is considered good practice to have a core stakeholder team active in most of the TNA steps and they exchange information with and collect feedback on TNA results from their 'wider groups'.

Prioritising technologies within strategic sectors

The prioritisation of (sub)sectors in a TNA is focussed on what benefits could be achieved from climate change mitigation and adaptation measures within the (sub)sectors. Subsequently, technologies are selected within these prioritised (sub)sectors. A crucial step in a TNA is that country stakeholders (including potential technology users and decision makers) familiarise themselves with potential technologies.² When considering potential technologies, it is important to make optimal use of resources. For instance, in order to avoid duplications, multiple countries could pool their resources for their TNAs and jointly work on technology familiarisation.

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¹ http://unfccc.int/ttclear/pages/tec_home.html Bonn, 18-21 August 2014.

² Using, a.o., <http://climatetechwiki.org> and the sectoral guidebooks at <http://tech-action.org>

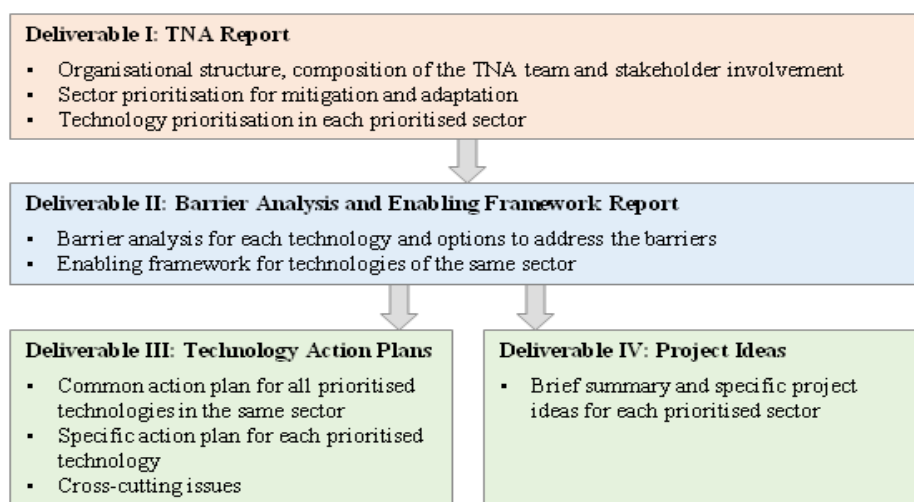


Figure 1. Main deliverables of a TNA process
(source: UNFCCC, 2014. TNA Good Practices report, <http://unfccc.int>)

Using multi criteria decision analysis (MCDA) technology options are 'scored' against climate and economic, social and environmental development benefits for a country, as well as assessed in terms of costs. MCDA enables participatory assessments and stimulates stakeholder dialogues about the benefits and costs of technologies.

Technology Action Plans and project ideas

A next stage in a TNA is to prepare Technology Action Plans (TAPs) and project ideas. In most TNAs, TAPs have been considered as packages of measures or actions to address barriers to the implementation of prioritised technologies in a country. Once barriers have been identified, categorised and described, it has been good practice to:

- Prioritise barriers, *e.g.*: which of the barriers are the most relevant for a prioritised technology?
- Explore causal relationships between barriers, as one barrier may be the result of other barriers.
- Clearly distinguish between different stages of technology development and transfer (*e.g.*, technologies in R&D or diffusion stage), as each stage has different (types of) barriers.

For the removal of barriers, TAPs can contain measures in different categories, such as economic and financial support, capacity building, infrastructure investments, networking activities and international cooperation. TAP measures are often specified by describing, for instance:

- why is the measure important in light of the identified barrier,
- which public and/or private institution will be responsible for the measures,
- when will the measure be needed,
- how much will a measure cost, and
- what are possible national and international sources of funding?

A number of TNAs have aggregated measures across technologies and formulated their TAPs at the level of a sector or even at the national level.

In the latest round of TNAs, between 2009 and 2013, 26 countries developed 262 project ideas in total. 95 per cent of the project ideas contained descriptions of goals and objectives, albeit with different levels of (quantitative) detail. Almost all project ideas contain an indication of the project duration, but determining good practice in choosing the timeframe depends on the technology and local context: project ideas for technologies which are in an R&D phase or require infrastructural investments or country-wide system improvements, usually have longer timeframes than projects supporting near-commercial technologies towards market diffusion.

Enhancing implementation of TNA results

Experts from financial institutes, multilateral development banks (MDBs) and other development banks, who have been interviewed for the report, have argued that TAPs and project ideas generally lack information about the business case of technologies (*e.g.*, internal rates of return or economic rates of return). Such information does not have to be detailed, as long as it provides policy makers and investors (both public and private) with a good overview of the economic benefits of a technology (*e.g.*, at the project/ programme level or for the national economy) within a country during a certain timeframe, including the impact of policy decisions on the implementability of the technology. This would also allow for prioritisation and allocation of (public) resources: *e.g.*, will the economic benefits outweigh the costs; and are there realistic policy instruments that can enhance the viability of such technologies?

Box 1. TNA process and reporting guidance

Guidance on the content of each deliverable (steps and reporting outputs) was provided by UNEP DTU in the form of report templates with reporting suggestions per section.¹ A step-wise guidance to the TNA process and its organisation is provided by the TNA Handbook² and the explanatory note by UNEP DTU on organising the national TNA process.³ In addition to this guidance, countries have received operational and technical support from UNEP DTU and from the regional collaborating centres: Asian Institute of Technology (AIT, Thailand), Environment and Development Action in the Third World (ENDA, Senegal), Fundación Bariloche (Argentina) and Libelula (Peru).

¹ URC, 2012. TNA and TAP Report Template for Mitigation/Adaptation, Version 2, 16 February 2012.

² Handbook for Conducting Technology Needs Assessment for Climate Change, http://unfccc.int/ttclear/sunsetcms/storage/contents/stored-file-20130321154847356/TNA_Handbook_Nov2010.pdf

³ Dhar, S., J. Painuly and I. Nygaard, 2010. Organising the National TNA Process: An Explanatory Note, UNEP Risoe Centre, Denmark. http://tech-action.org/media/k2/attachments/OrganizingNationalTNAProcess_13.pdf

The report suggests, based on expert interviews, that a TNA could publish a call for proposals to invite technology owners and/or developers to submit TAPs and/or project ideas for prioritised technologies. Further to that, TEC9 recommended to also invite stakeholders who have not been directly involved in a TNA to generate interesting project proposals based on TNA priority areas.

Most interviewees, both TNA practitioners and technology transfer experts, emphasised that involvement in TNAs of key ministries for national development planning (e.g., Finance, Economic Affairs, Agriculture or Planning) can support the eventual implementation of TNA results. Without their involvement, there is a risk that TAPs are not endorsed as inputs for national planning as they are considered a result from 'outside' the ministries.

Both interviewed TNA practitioners and technology transfer experts explained how, in their view, implementation of TNA results can be enhanced through links with NAMA and NAP processes. For instance, NAMAs could leverage support for new technologies which have been prioritised in a TNA but which have no track-record in the country. With respect to harmonisation of TNA and NAMA/NAP processes for enhanced technology implementation, a number of views were noted, such as:

- Consideration of TNA and NAMA/NAPs as two subsequent stages in a national planning process, whereby TNAs focus on **analysis** (priority sectors and technologies and barriers/action analysis) and NAMAs/NAPs comprise the technology implementation stage.

- An integrated national planning process whereby, first, priority areas are identified (possibly as part of a NAMA or NAP) such as electricity, transport and water, which is then followed by a TNA to prioritise technologies within these areas and produce TAPs and project ideas for **implementation** as NAMAs or as part of a NAP.

Finally, with a view to supporting implementation of prioritised technologies, experts highlighted the potential role of the Global Environment Facility (GEF), MDBs and the Climate Technology Centre and Networks (CTCN). For instance, TAPs and/or project ideas could possibly be submitted to the GEF as project identification forms (PIFs) which could subsequently be considered by the GEF for development of full investment proposals. MDBs could support inter-country cooperation for a better matchmaking between country TNA programmes, especially when countries within a region have similar technology, capacity support and finance needs.

An important task of the CTCN is to provide support to developing countries in preparing and conducting TNAs (e.g., providing/suggesting tools) and enhancing the implementation of TNA outputs in the form of technology projects, programmes or strategies. For instance, the CTCN could catalyse financial support such as bilateral and multilateral funding sources, as well as tools and support for specific technology implementation aspects.

An important role has been mentioned in this respect for the national designated entities (NDEs) for technology transfer under the Convention. If supported well, NDEs could help bring private and public sector stakeholders together and support dissemination of TNA results to decision makers. NDEs may also coordinate the TNA process with other national focal points of the UNFCCC processes, such as NAMAs and NAPs and low emissions development strategies. Such a role provides an opportunity to encourage the bodies and actors involved, to align the processes and outputs of their work in a way which will enhance the prospects for successful implementation.

Next steps

The report on "Good Practices of Technology Needs Assessments" is an evolving document managed by the UNFCCC secretariat and UNEP DTU, reflecting the continuous developments of the TNA process.

TEC9 considered the draft report and provided guidance for further improvement, and requested to continue to work on the report and involve practitioners such as TNA coordinators and relevant organisations in that process.

Austrian Workshop on Voluntary Carbon Markets

“Local Enthusiasm - National Credibility”

As explained in an earlier issue of JIQ (July 2014), the project VCM-AT aims to assess options for enhancing the voluntary carbon market (VCM) in Austria as a complementary climate change mitigation instrument. In the framework of the project, an international workshop was organised on 30 September of this year in Vienna (Austria) on “Strengthening Voluntary Climate Initiatives in Austria - Assessing the scope of the Voluntary Carbon Market”. This article presents some workshop highlights.

High demand for projects “at home”

The project VCM-AT has revealed a high demand for national GHG emission reduction projects, both within the EU and in Austria. Project leader **Mr Dorian Frieden**¹(JOANNEUM RESEARCH, Austria) pointed out that national projects can foster innovation, achieve emission reductions in sectors and by entities not addressed by the EU ETS, and contribute to raising awareness of climate change. For carbon credit buyers, national emission reduction projects can be more attractive than international projects due to their stronger visibility and tangibility, so that buyers have a greater bond and resonance with the project.

VCM-AT has identified a strong diversity of domestic GHG emission reduction initiatives throughout Europe, which leads to the expectation that national mitigation actions in non-ETS sectors will increase. At the same time, it leads to an important discussion about the quality of the emission reduction credits and possible overlaps with national GHG emission accounting and the EU ETS. Such overlaps can lead to ‘double counting or selling’ of emission reductions and hinder certification by international carbon credit standards.

Voluntary & mandatory actions must co-exist

An important objective of the workshop was to discuss the scope for a voluntary carbon market (VCM) in Austria to support other mandatory and voluntary climate policy measures. **Ms Gertraud Wollansky** (Ministry of Agriculture, Forestry, Environment and Water Management, Austria) presented an overview of mandatory and voluntary climate policy measures implemented in Austria, such as the Austrian Climate Act and CO₂ standards for cars (mandatory) and carbon offsetting activities by individuals and companies (voluntary). She argued that all possible efforts are needed for climate change mitigation and that

mandatory and voluntary measures therefore must co-exist.

In light of that, the main benefit of VCMs is to provide emission reductions which are extra and additional to other measures and therefore do not lead to double selling of emission reductions. Therefore, as Ms Wollansky explained, VCM schemes have to operate separately from existing compliance schemes (such as the EU ETS) and need to observe high integrity standards so that credits are credible and attractive.

Moreover, she stated that VCM should not divert state aid and not lead to a shift of credits from the government to private entities. Other issues for further consideration are whether and to what extent VCM investments could pick low hanging fruits which Austria may need later in order to comply with future climate policy commitments.

In terms of what the Government of Austria could do to help establish the VCM in Austria, Ms Wollansky suggested awareness raising activities. Moreover, she recommended consideration of experiences with Kyoto mechanisms and other existing voluntary mechanisms.

Social criteria most important

An overview of the VCM demand side in Austria was presented by **Mr Jürgen Suschek-Berger** (IFZ Graz) who presented the outcomes of interviews with representatives of 14 Austrian enterprises from various economic sectors. Stakeholders were, among others, asked which framework they think is necessary for establishing and improving the VCM in Austria and what could be motivating factors and barriers concerning entering the VCM.

Some of the key outcomes from the interviews were:

- For the interviewed companies, the voluntary CO₂ compensation is a relatively small measure besides many other more important activities for environmental protection, ecological improvement in the production lines, energy saving or the use of renewable energy sources.
- Most of the enterprises work with only one provider of VCM credits and they are generally satisfied with their VCM credit providers and operation of the VCM.

¹ Contact: Mr Dorian Frieden, JOANNEUM RESEARCH, e-mail: dorian.frieden@joanneum.at. The project VCM-AT is funded by the Austrian Climate and Energy Fund (Klima- und Energiefonds). All presentations summarized in this article are available on the project website <http://www.vcm-at.info>.

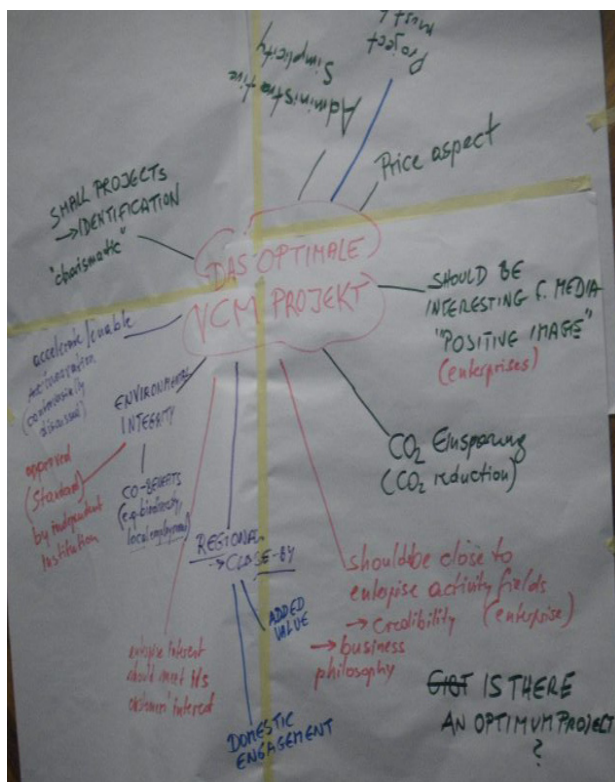


Figure 1. Workshop discussions on what an 'optimal VCM project' in Austria would look like

- The price of the CO₂ certificates is an important but not decisive aspect of entering the VCM. Generally, the costs of VCM credits are low in comparison with other environmental measures.
- Interviewed companies indicated that their choice of VCM projects is mainly triggered by social criteria, rather than project type (e.g., renewable energy, reforestation, energy saving).
- Domestic enterprises in Austria prefer to invest in domestic VCM projects, while companies working abroad or with branches abroad also tend to invest in foreign VCM projects.
- Companies generally prefer projects with high environmental and social standards (e.g., Gold Standard).

Local projects more tangible

Mr Wytze van der Gaast (JIN, the Netherlands) explained recent developments in the Dutch VCM. He explained how a top down analysis (Ecofys, 2012, see JIQ Autumn 2012) showed a relatively modest potential of 0.5 to 1 Mt CO₂-eq/year for carbon credit projects in the Netherlands. A bottom up study by De Gemeynt and SQ Consult (2014, see JIQ July 2014) identified several local CO₂ compensation initiatives in the Netherlands where local parties invest in local projects. The latter study concluded that due to the diversity of activities, VCM in the Netherlands is currently not transparent.

Local projects are relatively popular for VCM purposes in the Netherlands as they are more tangible. Examples

of such projects are: using heat from mine water in closed mines, offsetting CO₂ emissions of schools and sport clubs, and combining technologies in projects or clusters to reduce overall costs. Examples of Dutch VCM programmes are: Klimaatfonds Haaglanden, Zeeuws Klimaatfonds, CO2Bank Utrecht and Energy Valley.

The analysis by De Gemeynt and SQ Consult showed that most of the current VCM programmes in the Netherlands focus on local climate neutrality. However, their criteria for GHG accounting and additionality differ and are generally more flexible than those applied by international VCM standards. Another aspect is that the programmes allow electricity production projects (e.g., PV projects), which could potentially lead to double-selling issues with the EU ETS (see above). Finally, it has become clear that prices paid for the VCM credits within the Dutch local programmes could amount to €20 - €25 per tCO₂. In light of the above, the Netherlands Government, together with VCM stakeholders, has taken the initiative to work towards greater transparency in the Dutch VCM, while keeping the local enthusiasm intact.

Solutions for double selling

Mr Daniel Bachmann (The Gold Standard Foundation) focussed specifically on the issue of 'double selling'.

One possible solution would be that national governments cancel emission rights to avoid accounting for emission reductions at the national level, as well as in the VCM project. However, he explained that VCM projects generally do not use this option. Mr Bachmann then presented four possible solutions for handling 'double selling':

1. Exclude VCM project emission reductions from national GHG reporting.
2. Apply the CDM/JI rule of 'insignificance', so that national VCM projects can be implemented until their emission reductions jointly reach a volume which equals 5% of the national GHG emissions of the country.
3. Gold Standard could buy international credits to compensate for possible double selling. These credits could, for instance, originate from CDM projects and corresponding costs can be added as a fee to the VCM credit purchasers.
4. Avoid the 'double-selling' issue by creating VCM projects whose scope is not covered by the national GHG reporting (e.g., soil carbon in agriculture).

Gold Standard has yet not decided on a definite solution and how to treat the double-selling issue. However, according to Gold Standard, the ultimate goal should be that governments which want to support voluntary market activities within their country, commit themselves to one of the following options:

1. Take the effects (GHG reduction / sequestration) of voluntary projects out of their national accounting,

2. Commit to not selling the effects (GHG reduction/sequestration) that are generated through voluntary projects,
3. Cancel the governmental emission right/allowances for the project developer.

Woodland creation under the VCM

Dr Vicky West (Forestry Commission, UK) explained the background and experience with the UK's Woodland Carbon Code, which is currently the UK's only recognised scheme creating domestic carbon units. Managed by the Forestry Commission, woodland creation projects are independently validated and verified. Both projects and carbon units appear in the UK Woodland Carbon Registry, managed by Markit Registry. Projects have to use high standards of sustainable forest management (the UK Forestry Standard), as well as high standards of carbon accounting similar to other global voluntary carbon standards. To date over 200 projects have registered, of which 87 are validated. Validated projects will create over 3,000 ha of woodland and are predicted to sequester around 1.5 MtCO₂ over the next 100 years.

In 2013 the UK Government introduced additional legislation in the Company's Act, making it mandatory for all companies listed on a stock exchange to report their gross emissions annually (this could be extended to all large companies in 2016). The government reporting guidance states that all companies can voluntarily report their emissions, and that, whether mandatory or voluntary, they can compensate for their gross emissions in one of three ways, including the purchase and use of verified Woodland Carbon Units. Changes in 2014 to the British Standards Institute's Carbon Neutrality specification (PAS2060) mean that domestic standards, including the Woodland Carbon Code, could provide credits to compensate for emissions when claiming carbon neutrality.

Currently, discussions are taking place with other government departments about possible changes to the national emissions accounting procedure or the Kyoto accounting procedure to make domestic carbon units more explicit within these systems, providing clarity over the double-selling issue. Dr West explained that domestic units are becoming accepted more widely and that there is a growing demand globally for inclusion of domestic action.

VCM testing ground for mandatory measures

Mr Nikolaus Wohlgemuth (First Climate, Switzerland) explained that, according to the revised CO₂ Act, Switzerland's national GHG emission reduction target of 20% by 2020 (below 1990 levels) can only be achieved with help of national emission reduction measures. At the heart of Swiss climate policy is a CO₂ levy on combustibles. During 2008-2012, several voluntary measures enabled two major types of economic players to avoid paying the CO₂ levy.

For example, a voluntary Climate Cent charged on all motor fuels (since October 2005) allowed fuel importers to remain exempt from the CO₂ levy. These funds were used to finance national and international emissions reduction projects. A similar exemption applied to private-sector companies which entered into an agreement on voluntary emissions reductions with the Swiss authorities.

In Switzerland's new climate legislation, these initially voluntary instruments have turned into legally binding requirements. Today, the mineral oil companies are obliged to compensate (domestically only) a certain share of the emissions from fossil fuels imported to Switzerland. Voluntary market actors are now searching for projects which are to be registered at the Federal Office for the Environment and sell the generated emission reductions to the association representing the mineral oil companies.

Mr Wohlgemuth further explained that an exemption from the CO₂ levy can still be granted to companies, if they commit to much more ambitious reduction targets, whereby target achievement will be monitored. The 52 large emitters, which participate in the national emissions trading system (Swiss ETS), are also exempted from the CO₂ levy. In addition, a mandatory CO₂ emissions intensity target for passenger cars has replaced the former purely marketing-oriented label. Mr Wohlgemuth concluded that voluntary measures have enabled a successful testing of emission reduction options before making them legal state of the art.

Conclusions

The VCM-AT project workshop and the occurring discussions highlighted that:

- In principle, all efforts that contribute to climate change mitigation are needed. VCMs can be important additions to mandatory climate policy measures,
- Local VCM projects can support local climate awareness and are popular due to their visibility,
- For the national environmental integrity of VCM projects, it is important that double selling of emission reductions is avoided,
- Possible solutions for dealing with double counting were identified and can be considered alongside JI and CDM experience, and
- Voluntary climate actions, such as VCM, may serve as a testing ground for effectiveness and efficiency of measures before making measures mandatory.

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Understanding Policy Contexts and Stakeholder Behaviour for Consistent and Coherent Environmental Policies

A synthesis of results from the APRAISE project

On 24 September of this year, the Final Conference of the EU-funded project APRAISE took place in Brussels. While earlier APRAISE workshops had focussed on sharing project findings with energy efficiency, renewable energy and waste management experts and stakeholders, the Final Conference was aimed at presenting an overview of the APRAISE results and discussing how these can be used by policy makers for improved environmental target setting and policy implementation, including assessments of environmental, social and economic policy impacts. The conference was attended by over 100 participants (see <http://appraise.org>).



Understanding Policy Contexts and Stakeholder Behaviour for Consistent and Coherent Environmental Policies

A synthesis of results from the APRAISE project

APRAISE is an EU funded project that stands for "Assessment of Policy Interrelationships and Impact on Sustainability in Europe".¹ The overall motivation of the project is to improve environmental policy making in support of the transition towards a sustainable European society. APRAISE evaluates EU environmental policies and their national implementation in Member States and compares the intended policy results with the actual policy achievements. Most importantly, APRAISE explains why a policy may perform differently than expected and draws the relevant conclusions to improve future policy initiatives in similar areas.

For this analysis, APRAISE focuses on environmental policy areas that are of key importance for a resource-efficient and environment-friendly Europe: energy, climate, agriculture, water, waste, air and biodiversity. For these areas, APRAISE explains how, based on the respective EU directives, different Member States have identified targets, policies to achieve these targets and policy instruments for implementation of these policies. APRAISE evaluates policy results by asking three questions, henceforth referred to as the APRAISE 3E method:

1. **Efficacy:** Which environmental policy effects were expected/anticipated in the Member State in question, taking into account the best knowledge available at the time of policy design (including how policy instruments were expected to achieve these effects)?
2. **Effectiveness:** Which have been the actual effects of the policy instruments?
3. **Efficiency:** Could the realised effect/impacts have been achieved with fewer resources or could a

better effect/impact be achieved with the same resources?

This approach acknowledges that policies and policy instruments are not implemented in a 'vacuum' or under laboratory conditions, but in real 'policy systems', e.g., a market-based society. This also implies that the effects of an environmental policy instrument (such as regulatory, economic and information-based instruments) depend on the socioeconomic and governance system within which it is implemented.

The APRAISE 3E method allows for an improved understanding of how stakeholders respond to policy instruments and how this influences the implementation of policy instruments and their outcome. As a result, knowledge about environmental policy instruments can be improved, so that the eventual difference between policy expectations (based on efficacy) and actual policy outcomes (effectiveness) can be reduced.

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¹ This article contains excerpts from the APRAISE synthesis report, which describes the APRAISE method, summarises application of the method to six EU environmental case studies, and summarises the main conclusions from the case study analysis: http://appraise.org/sites/default/files/apraise_synthesis_document_2.pdf



Figure 1. APRAISE Final Conference, Brussels, 24 September 2014

In order to design and assess scenarios about future developments regarding the ‘policy systems’ and possible impacts on policy performance, APRAISE applies quantitative models, which can prioritise either micro or macro-economics, depending on the situation. Moreover, these models can “reconstruct” the past by formulating “what if” scenarios. For example, what would have been the policy effects in the absence of the economic crisis?

Achievements

A key achievement of APRAISE is the development of the APRAISE 3E method for a better understanding of how contextual factors and implementation barriers shape policy outcomes. The method has been tested within the context of six case studies carried out in a total of seven EU Member States. Subsequently, the method has been improved to help EU and Member State policymakers to allow for conclusions regarding future environmental policies. For a subset of case studies, model scenarios have been developed to anticipate policy effects assuming different economic and political futures.

To complement the conventional approach that focuses on policy targets, APRAISE has emphasised the importance of processes in policy design and evaluation. For instance, some of the APRAISE case studies showed that while targets may have been achieved, there could still be inefficiencies in the policy system context or during implementation, which could compromise the achievement of future environmental policy objectives and efforts to reach a resource-efficient economy. APRAISE therefore recommends that environmental policies should not only focus on targets but also on underlying mechanisms and processes supporting medium- to longer-term environmental objectives.

The key lesson from APRAISE is that a better understanding of contextual, implementation and

policy interaction aspects enables policymakers to design more robust policy instruments, which implementation and operation can be adapted to (foreseen) changes in the circumstances (context). The APRAISE 3E method, in combination with the case studies in which it has been applied, offers a key tool that helps to inform policymakers about these aspects and to enhance environmental policymaking. Figure 2 illustrates this learning process.

How the APRAISE 3E Method works

The APRAISE 3E method helps policymakers to more systematically assess the anticipated effect(s) of a policy (instrument) during its design stage, by making better-informed assumptions about their contextual, implementation and stakeholder behaviour aspects (including possible interactions with other policy instruments). The method, therefore, helps to close the gap between expected/intended and achieved policy effects and impacts. At the same time, the method is applicable in any Member States and lessons from these applications can be relevant for multiple policymaking levels.

The APRAISE 3E method adopts a systems approach to examine an event or a system in a holistic manner by emphasising the relationships and interactions between the system’s elements (*i.e.*, the addressed actors and the institutions governing their interrelationships) (the main steps of the APRAISE 3E method are shown in Box 1).

The APRAISE 3E method assesses the following groups of factors:

- **System context factors**, such as environmental factors, economic factors, social factors, and technological factors.
- **Policy implementation factors**, such as Political & Social Acceptance, Policy Consistency with wider environmental and sustainability goals, and Policy Coherence.

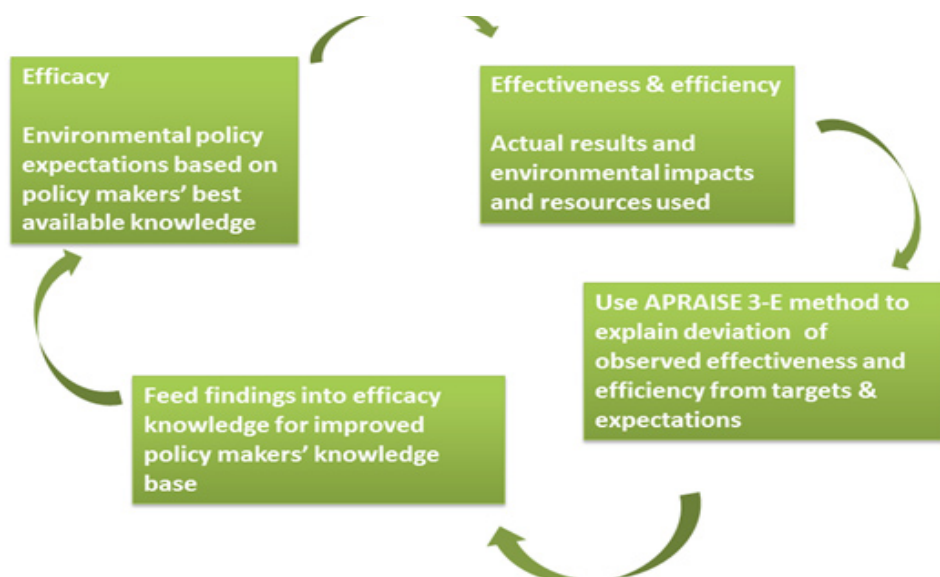


Figure 2. How the APRAISE 3E Method helps policy makers make better informed assumptions about the efficacy of policy instruments

- **Policy and stakeholder interactions** at the policy level (policy targets or policy instrument design features) and at the stakeholder level (direct and indirect impacts of policy instruments or instrument mixes upon stakeholders).

Case studies

The APRAISE 3E method has been applied to six environmental policy case studies, each for two EU Member States:

- The impact of hydropower generation on river basins (Austria and Slovenia),
- Recycling of plastic packaging waste (Germany and the Netherlands),
- Transposition of the EU Renewable Energy Directive and its interactions with other environmental objectives (focusing on biofuels for transport) (Austria and UK),
- The policy interactions of offshore wind energy generation and conserving marine ecosystems (Estonia and Germany),
- Sustainable and energy efficient development – Synergies & Trade-offs among Renewable electricity production and energy efficiency promotion in the built environment (Greece and Slovenia),
- Policy interrelationships in the field of sustainable buildings (Greece and the Netherlands).

These case studies can be downloaded from <http://appraise.org>.

Box 1. Key steps of APRAISE 3E Method

- Task 1** – Specify the basic environmental policy area
- Task 2** – Characterise policy instruments and relevant stakeholders
- Task 3** – Analyse effectiveness and efficiency of the policy instruments and compare with anticipated/theoretical potential (efficacy)
- Task 4** – Analyse the policy system context and its impact on environmental effectiveness and efficiency
- Task 5** – Analyse the policy transposition and implementation process and possible impact on policy effectiveness and efficiency
- Task 6** – Explore interactions with other environmental policy instruments
- Task 7** – Validate above findings with stakeholders
- Task 8** – Use above insights for improved assumptions about policy context, implementation and interaction impacts, to improve knowledge of efficacy of policy instruments.

Key findings of APRAISE

At its Final Conference, the project APRAISE presented the following key findings:

1. Improved understanding of policy system context improves environmental policy making.

In reality, the effectiveness and efficiency of an environmental policy may differ from anticipated effects (efficacy). The APRAISE 3E method offers a tool to help policymakers better understand and more systematically analyse the context of individual policy instruments with the ultimate goal of bringing effectiveness (actual implementation effect) closer to efficacy (the theoretical potential).

2. Understanding policy instrument interactions can support coherent environmental policy mixes

Coherence of policy instruments across different environmental policy areas can be enhanced by:

- aligning policies so that policy targets and objectives form a consistent package,
- understanding policy implementation processes and stakeholder behavioural effects, and
- making implementation and operation of policy instruments adaptable to (foreseen) changes in the circumstances (context).

3. Increased focus on target setting improves understanding of unanticipated policy effects

Policy targets sometimes are as excessively easy to reach, while at other times the problem definition is inadequate, leading to effects contrary to intended policy objectives. A more systematic analysis of target setting would improve the understanding of the unanticipated effects of the policies under analysis. They also highlight the importance of analysing the policy process.

4. APRAISE 3E method could support environmental policy impact assessments

As the APRAISE 3E method is specifically designed for explaining why observed policy effects differ from policy makers' anticipations and targets, the method could be an added value to policy impact assessments.

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APRAISE Consortium

http://apraise.org/sites/default/files/7th_newsletter.pdf

Box 2. APRAISE Summer School, 25-29 August 2014, Ljubljana, Slovenia

Within the context of the project APRAISE, a Summer School was organised by the University of Ljubljana in Slovenia, in cooperation with JOANNEUM RESEARCH (Austria). The objective of the Summer School was to teach students about policy making for a better environment, in order to provide a better understanding of real-life situations where multiple policies exist and where people and organisations respond differently to policy instruments. Students attended lectures about assessing environmental policy instruments individually and how these instruments may interact with each other with a focus on enhanced effectiveness and efficiency of these instruments, while gaining experience in using tools for policy analysis (modelling, identifying and analyzing policy context factors, policy cycle analysis, market mapping, etc.). Part of the programme was a visit to a Slovenian Hydro Power Plant. For further information, see <http://appraise.org>.



POLIMP Workshop: Challenges to Renewable Energy Deployment in Europe

On 15 October of this year, the POLIMP project (funded by the EU FP7 Programme) held its second stakeholder workshop in London, UK. At University College London, the discussion focused on the financial and policy environments that facilitate the deployment of renewable energy in Europe.

The 2nd POLIMP Policy Brief, 'Financing Renewable Energy for Europe: The way forward', formed the basis for the workshop agenda. It underlines that, despite its advantages, a wider deployment of renewables as a major source of energy in EU Member States requires overcoming several challenges. Some of the most mentioned and discussed challenges at the workshop are presented below.

Consider the wider system

Workshop participants explained that many renewable energy technologies are already competitive, within

the EU and beyond. This is partly due to the sharp reduction in technology costs during the previous years. For example, the costs of manufacturing solar PV have fallen by an estimated 70 to 80 percent between 2007 and 2012. In addition, capital for investment has increasingly become cheaper and more widely available for renewable energy investments.

However, for a continued development of an economy based on renewable energy, also the wider energy system has to be taken into account, including balancing requirement. For example, natural gas can function as a form of backup power to balance the down times that are inherent to intermittent renewable energy sources such as solar and wind power. Energy systems not only need to reward low-emission energy options, but also to ensure reliability.

Lack of regulatory certainty

A challenge experienced by developers of renewable energy projects is the lack of regulatory certainty. As projects need a preparatory period of several years, certainty about the regulatory framework towards the future is needed. According to workshop participants, lack of clarity about the EU's renewable energy policy





Figure 1. Discussion at the workshop. From left to right: Mike Landy (Renewable Energy Association UK), Andreas Gunst (DLA Piper), Martin Schoenberg (Climate Change Capital) and Helen Wright (Energy and Climate Intelligence Unit).

and targets beyond 2020 makes it difficult for project developers to take decisions that have long-term effects.

An even more serious issue, mentioned by multiple stakeholders, is the practice of retroactive policy changes, as applied by several EU member states. For instance, in 2014, both Italy and Spain implemented retroactive changes to their renewable energy support schemes. At the workshop, some developers argued that such retroactive changes are illegal and will lead to bankruptcy of projects. As a result, investments shift away from countries with unstable policy systems and mistrusted governments and legal systems towards countries with more stable regulatory systems, notably the United Kingdom.

International policy harmonisation

Related to the lack of regulatory certainty is the lack of international policy harmonisation. Workshop participants argued that within the EU there is a lack of policy consistency, and, therefore, they called for the formulation of a common European policy framework for promotion of renewable energy deployment. Although the EU has taken first steps to harmonisation by developing cooperation mechanisms in article 6 to 11 of the Renewable Energy Directive, stakeholders claimed that it is difficult to develop projects through these cooperation mechanisms, considering the uncertainty about the policy framework and renewable energy targets after 2020.

An additional complicating factor may be the EU's Guidelines on State Aid, as applicable from 2014, which means that national support schemes, as well as international cooperation mechanisms by two member states, should be open to bidders from other countries. According to stakeholders at the workshop, the Guidelines are expected to reduce competitiveness of small-scale renewables as compared to large-scale projects.

Public acceptance and participation

In addition to the abovementioned economic and regulatory challenges, social aspects may also pose serious challenges to the development of renewable energy. POLIMP's 1st Policy Brief, 'Acceleration of clean

technology deployment within the EU: the role of social acceptance' (presented in May of this year at a POLIMP workshop in Brussels) covers this topic. One of the recommendations to increase public acceptance from the policy brief was to involve the public in project development by enabling co-ownership by citizen cooperatives.

The opportunities and challenges of this approach have been elaborately discussed at the workshop. Stakeholders agreed that citizen cooperation and co-development can increase public acceptance, as this creates 'local value' for projects. However, co-ownership may result in financing difficulties, as citizen cooperatives generally do not have access to sufficient funding, and banks are wary of providing loans to these cooperatives, which usually lack a proven track-record in project development.

For further information, please visit:

<http://polimp.eu/events/polimp-stakeholders-workshops/item/2nd-polimp-stakeholders-workshop-london-uk>

Announcement

**POLIMP Side-event in Lima, Peru
COP20, side-event Room 3
Saturday 6 December 2014, 11:30 – 13:00**

The POLIMP project will organise a side-event at the UNFCCC COP20 in Lima on:

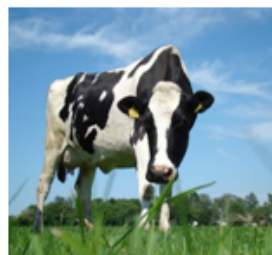
Enhancing the knowledge base for climate change policy making

The side-event will focus on:

- a practical framework for the evaluation and comparison of **climate governance** models (covered by POLIMP).
- how to embed options for climate change mitigation and adaptation in **national (development) planning**.

Speakers will highlight European and international perspectives.

For further information on the agenda and speakers, please visit <http://www.polimp.eu>



Join the discussion on biogas and biomethane sustainability, policies and markets!

Side-Event Energy Convention Groningen, 19 November 2014

MartiniPlaza
Leonard Springertlaan 2
97 27 KB Groningen
The Netherlands

Registration

Please request your unique registration code via Frederik Wanink:
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More info and hotels

energyconvention.nl
groengasproject.eu
toerisme.groningen.nl/en

This side-event provides a synthesis of biogas and biomethane projects carried out during the past three years as part of the *INTERREG Groen Gas – Grünes Gas* programme in the Netherlands and Germany. The focus is on the value chain of biogas and biomethane, and the possibilities for the acceleration of bio-based energy development through cross-border cooperation, innovation and knowledge sharing.

Presentations will be delivered on policies, support systems and certification schemes for biomass-based energy, as well as spatial bio-energy concepts. The event concludes with an interactive session for discussing the future of bio-energy in the Netherlands, Germany and Europe as a whole.

Event agenda

- 9:30 **Welcome and introduction**
Jelle van der Heide, Province of Drenthe
- 9:40 **Assessing modes and performance of regionally embedded bio-energy chains**
Kevin Grecksch, University of Oldenburg
- 10:05 **Level playing field for the European biogas and biomethane markets**
Eise Spijker, JIN Climate and Sustainability; Martin Palovic, Jacobs University Bremen
- 10:30 **Towards integrated energy landscapes: the bio-energy landscape as inspiration**
Dr. Christian Zuidema and Jessica de Boer, University of Groningen
- 10:55 *Coffee break*
- 11:25 **Biogas in Lower Saxony: developments and challenges**
Dr. Marie-Luise Rottmann-Meyer, 3N (Renewable Resources Network for Lower Saxony)
- 11:55 **Biogas as stepping stone towards a sustainable bio-economy**
Janneke Hagens, Radboud University Nijmegen
- 12:20 **Platform discussion on the future of biogas and biomethane**
Facilitated by Jörg Wilke, Northern Institute of Thinking
- 13:00 *Lunch*

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APRAISE, 2014. Understanding Policy Contexts and Stakeholder Behaviour for Consistent and Coherent Environmental Policies, A synthesis of results from the APRAISE project, project funded by EU FP7 programme. <http://apraise.org>

APRAISE is an EU funded project that stands for "Assessment of Policy Interrelationships and Impact on Sustainability in Europe". The overall motivation of the project is to improve environmental policy making in support of the transition towards a sustainable European society. APRAISE evaluates EU environmental policies and their national implementation in Member States and compares the intended policy results with the actual policy achievements. Most importantly, APRAISE explains why a policy may perform differently than expected and draws the relevant conclusions to improve future policy initiatives in similar areas.

For this analysis, APRAISE focuses on environmental policy areas that are of key importance for a resource-efficient and environment-friendly Europe: energy, climate, agriculture, water, waste, air and biodiversity. For these areas, APRAISE explains how, based on the respective EU directives, different Member States have formulated targets, policies to achieve these targets and policy instruments for implementation of these policies.

Avner, P., J. Rentschler and S. Hallegatte, 2014. Carbon Price Efficiency: Lock-in and Path Dependence in Urban Forms and Transport Infrastructure, Policy Research Working Paper n°6941 – June 2014, authors are affiliated with: CIRED, APREC, University College London and World Bank. <http://cdclimat.com>

To assess the impact of public transport on the efficiency of a carbon tax to reduce commuting-related CO₂ emissions, the paper investigates two exogenous scenarios using a dynamic urban model (NEDUM-2D) calibrated for the urban area of Paris: (i) a scenario with the current dense public transport infrastructure, and (ii) a scenario without.

It is shown that the price elasticity of CO₂ emissions is twice as high in the short to medium run if public transport options exist. Reducing commuting-related emissions thus requires lower (and more acceptable) tax levels in the presence of dense public transportation.

These results provide interesting input for policy makers in fast-growing cities in developing countries. The ability to reduce emissions, mitigate the effect of rising oil prices and the impacts of other negative externalities such as congestion and air pollution in the future critically depend on the decisions they make today. Where urban planning and public transport are

concerned, "pollute now and clean up later" can be a very inefficient strategy.

Desai, Z., E. Alberola and N. Berghmans, 2014. Introducing short term flexibility in the EU ETS to assure its long-term credibility : a multi-criteria analysis of policy options, Climate Report n°45 – July 2014. <http://cdclimat.com>

This report highlights the conclusions from the multi-criteria analysis on five potential reforms of the EU ETS, that could contribute to the ongoing debate on the Market Stability Reserve (MSR) proposed by the EU Commission:

- The choice of the policy option should be based in priority on its contribution to the CO₂ emissions abatements and political and economic performances rather than on its institutional feasibility.
- Among the five reforms, the MSR is never preferred option to restore the long term credibility of the EU ETS, and instead other options, such as an auction reserve price or a rolling emission cap, are considered more useful for restoring the scheme's credibility.

However, when the institutional feasibility is considered to be a priority, the MSR appears in the first position in the ranking.

The choice of the best policy option is not supported by all stakeholders and the difficulty of the regulator remains to build a consensus. Whereas setting an auction reserve price has the lowest level of consensus between stakeholders, the choice of the MSR or the rolling emissions cap present the wider consensus.

MacDonald, L. and Jing C., 2014. The Sudden Rise of Carbon Taxes, 2010–2030, Essays, Center for Global Development. <http://www.cgdev.org/publication/sudden-rise-carbon-taxes>

This essay pictures a situation in 2030 in which annual global GHG emissions have fallen two-thirds with continued steep reductions ahead, and seeks to answer how this happened. It has a particular focus on the politics and policy process in the United States and China, the world's two biggest emitters in 2010.

Marcu, A., 2014. The 2015 Climate Agreement: What's in it for the EU?, in: Climate Change, CEPS commentaries. <http://www.ceps.eu/book/2015-climate-agreement-what's-it-eu>

This commentary explains how the European Union, together with other countries, is making a second effort to reach a comprehensive global climate change

agreement in Paris in 2015, after the unsuccessful attempt to do so in Copenhagen in 2009. In a Europe still preoccupied with recovery from the economic crisis, why should the EU be tempted to offer leadership in the field of climate change and what would such an agreement bring – in short, what's in it for the EU?

Although the world has changed since the earlier attempt to reach agreement, the EU needs to continue to be a leader in the climate talks, argues the author, both for the sake of the world and for our own EU interest. Others will come and share that leadership and shape it together. It is the only way that the EU can be successful in Paris.

Sikkema, R., M. Junginger, J. van Dam, G. Stegeman, D. Durrant and A. Faaij, 2014. Legal Harvesting, Sustainable Sourcing and Cascaded Use of Wood for Bioenergy: Their Coverage through Existing Certification Frameworks for Sustainable Forest Management, *Forests* 2014, 5, 2163-2211. <http://www.mdpi.com/journal/forests>

The first objective of this paper was to provide an inventory of developments of certification schemes for sustainable biomass production, following recent EU legislation (both formalised and under development). One main pillar is the EU Timber Regulation for legal harvesting; a second one is the EU's 2010 recommendations for sustainable woody biomass sourcing for energy; the third one is the EU Waste Directive.

The second objective was to benchmark the coverage of this (draft) legislation, when wood product certificates for sustainable forest management (SFM) are used as proof of the related legislative requirements. The paper focused on North America, as it is a major biomass supplier to the EU-28.

Together with existing forest legislation in the US and Canada, SFM certificates are actively used to cover the EU's (draft) legislation. However, North American forests are only partially certified with fibers coming from certified forests; these are referred to as forest management (FM) fibers. Other certified fibers should come from complementary risk assessments downstream in the supply chain (risk based fibers).

The paper's benchmark concludes that:

- (a) FM fiber certification by the Forest Stewardship Council (FSC) and the Program for the Endorsement of Forest Certification (PEFC) international standards show the highest level of coverage with EU's (draft) legislation; and
- (b) There is insufficient coverage for risk based fibers by FSC Controlled Wood (FSC-CW), PEFC Due Diligence (PEFC-DD), or SFI-fiber sourcing (SFI-FS).

Other weaknesses identified for elaboration are:

- (c) Alignment in definitions are needed, such as for primary forest, high carbon stock, and wood waste (cascading);
- (d) Imperfect mass balance (fiber check downstream) needs to be solved, as non-certified fiber flows are inadequately monitored;
- (e) Add-on of a GHG calculation tool is needed, as GHG life cycle reporting is not covered by any of the SFM frameworks.

Overarching Ph.D thesis

This publication is part of the PhD thesis by Richard Sikkema on sustainable forest management, international woody biomass trade and EU's renewable energy policies in 2020-2030. The Ph.D defense is planned on Friday the 28 November 2014 at the Utrecht University in the Netherlands.

UNEP and WMO, 2014. Ozone Layer on Track to Recovery - Success Story Should Encourage Action on Climate. http://ozone.unep.org/Assessment_Panels/SAP/SAP2014_Assessment_for_Decision-Makers.pdf

The Assessment for Decision-Makers, a summary document of the Scientific Assessment of Ozone Depletion 2014, is being published by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO), and is the first comprehensive update in four years. It was published ahead of the International Day for the Protection of the Ozone Layer on 16 September of this year.

The report highlights how the Montreal Protocol has protected the stratospheric ozone layer and avoided enhanced UV radiation reaching the earth's surface. The report shows that concerted international action makes a real difference. UNEP and WMO hope that the publication of the report will encourage climate change policy decision makers to display the same level of resolve and urgency in tackling the even greater challenge of climate change.

The phase-out of ozone depleting substances has had a positive spin-off for the global climate because many of these substances are also potent GHGs. However, the assessment report cautions that the rapid increase in certain substitutes (HFCs), which are themselves also potent GHGs, has the potential to undermine these gains. The assessment also notes that there are possible approaches to avoiding the harmful climate effects of these substitutes.

The **Joint Implementation Quarterly** is an independent magazine with background information about the Kyoto mechanisms, emissions trading, and other climate policy issues. *JIQ* is of special interest to policy makers, representatives from business, science and NGOs, and staff of international organisations involved in climate policy negotiations and operationalisation of climate policy instruments.

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Abbreviations

AAU	Assigned Amount Unit
ADP	Ad Hoc Working Group on the Durban Platform for Enhanced Action
Annex A	Kyoto Protocol Annex with GHGs and sector/source categories
Annex B	Annex to the Kyoto Protocol listing the quantified emission limitation or reduction commitment per Party
Annex I Parties	Industrialised countries listed in Annex I to the UNFCCC. Countries not included in Annex I are called Non-Annex I Parties
Annex II Parties	OECD countries (listed in Annex II to the UNFCCC)
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CER	Certified Emission Reduction (Article 12 Kyoto Protocol)
COP	Conference of the Parties to the UNFCCC
COP-MOP	COP serving as Meeting of the Kyoto Protocol Parties
DOE	Designated Operational Entity
DNA	Designated National Authority
ERU	Emission Reduction Unit (Article 6 Kyoto Protocol)
EU ETS	European Union Emissions Trading Scheme
EUA	European Union Allowance (under the EU ETS)
GHG	Greenhouse Gas
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
LCDS / LEDS	Low carbon (or emission) development strategy
LULUCF	Land Use, Land-Use Change and Forestry
NAMA	Nationally Appropriate Mitigation Actions
NAP	National Adaptation Programmes
PDD	Project Design Document
REDD	Reducing emissions from deforestation and forest degradation in developing countries
SBSTA	Subsidiary Body for Scientific and Technological Advice
SBI	Subsidiary Body for Implementation
TNA	Technology Needs Assessment
UNFCCC	UN Framework Convention on Climate Change

JIQ Meeting Planner

30 October 2014 Zürich, Switzerland

Escaping from the CDM doldrums – CER purchase above market prices and conversion of CDM into NAMAs (5:15-7:15 pm)
Contact: Zürich Carbon Market Association <http://www.zurich-cma.org/Events.3.html?eid=3>

19 November 2014, Groningen, the Netherlands

Side-Event Energy Convention Groningen on Biogas and Biomethane Sustainability, policies and markets
Contact: Eise Spijker, JIN, e-mail: eise@jiqweb.org

1-12 December 2014, Lima, Peru

COP 20, CMP 10, SBI 41, SBSTA 41, ADP 3
Contact: http://unfccc.int/meetings/lima_dec_2014/meeting/8141.php

6 December 2014, Lima, Peru

POLIMP Side-event at COP20, side-event Room 3, 11:30 – 13:00
Contact: Erwin Hofman, JIN, e-mail: erwin@jiqweb.org