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**Figure 1.** Presentation by Wytze van der Gaast at a sustainability conference in Assen, the Netherlands. Photo credit: Province of Drenthe.

## To Be Inspired - Editor's note

Recently, I was invited as a speaker by a group of concerned citizens. Near their village, a set of windmills had been built, which in their opinion were a clear example of horizon pollution and they did not see a clear need for the windmills. I started with describing climate change as a global problem, but soon moved to a problem description that was very close to my hosts' personal lives, followed by solutions that they themselves could contribute.

We had a similar experience when meeting with small and medium-sized enterprises from the Netherlands and other EU countries. Several enterprises have already started to green their business, but the large majority of enterprises still have not made that step. Reasons are often very straightforward: enterprises find it costly, do not know where to obtain funding, or belong to a value chain that is not green and which they cannot change. Through the GreenEcoNet initiative for small and medium-sized enterprises we try to collect inspiring stories from green companies and communicate these as valuable lessons to not (yet) green companies (see also page 10).

'Paris' has clearly generated much more attention for climate and sustainability and it is good to note that many small-scale initiatives are being started with the goal to inspire others. From the recent meetings, we sometimes get the feeling that 'to be inspired' is even more difficult than 'to inspire'. Nevertheless, responses can be heart-warming. At the end of the meeting with the concerned citizens, one person said: "I still don't like these windmills, but now I understand why they are here."

Wytze van der Gaast

## How TNA Results Can Be Inputs for NDCs: the example of Lebanon\*

**Over the years, the course of climate negotiations has moved slowly but surely from a top-down approach with quantified emission reduction commitments for a relatively small group of countries, to a bottom-up approach with voluntary pledges for a large group of countries. This has now become one of the corner stones of the Paris Agreement, which commits developed and developing countries to preparing Nationally Determined Contributions (NDC). Countries are relatively free in their NDC climate planning, provided that future plans are more ambitious than earlier ones.**

At the same time, over the years, considerable experience has been gained with processes under the UNFCCC that are in line with what the Paris Agreement asks countries to do with their NDCs. Since the end of the 1990s, over 100 developing countries have prioritised technologies for climate change mitigation and adaptation in light of their national development needs, using the process called Technology Needs Assessment (TNAs). Nationally Appropriate Mitigation Actions (NAMAs) and National Adaptation Plans (NAPs) are other examples of national processes to embed climate measures in national priorities.

How could NDC development and implementation benefit from processes such as TNAs, NAMAs, and NAPs? Potential interlinkages between TNAs and other processes under the Convention have been discussed regularly at the level of the Expert Group on Technology Transfer (EGTT, predecessor of the Technology Mechanism), the UNFCCC Secretariat and the Technology Executive Committee (TEC). For example, at the Global TNA Workshop organised in 2011 by the UNFCCC Secretariat, interlinkages between TNA, NAMAs and NAPs were a key discussion topic. This was followed by a [Background paper on inter-linkages between TNA and national and international climate policy making processes](#) presented at the fifth meeting of the TEC (TEC-V, 26-27 March 2013).

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### TNA outputs as inputs for (I)NDCs

This article illustrates, using the example of Lebanon, how TNA results can be used for NDC formulation. Lebanon conducted a TNA under the Global TNA Project during 2009-2013 with the following actions:

- Prioritization of technologies, through country-driven participatory processes, that can contribute to mitigation and adaptation while meeting the country's national sustainable development goals and priorities;
- Identification of barriers hindering the acquisition, deployment and diffusion of prioritised technologies;
- Development of Technology Action Plans (TAPs) specifying activities and enabling frameworks to overcome the barriers and facilitate the transfer, adoption, and diffusion of selected technologies in Lebanon.

Together these TNA stages and actions took around two years.

In its TNA, Lebanon focussed on four sectors: power and transport as sectors for mitigation and development, and agriculture and water for reducing vulnerability to a changing climate. Figure 2 shows the prioritised technologies in each sector.

After completing the TNA process, the government of Lebanon took next steps to incorporate the prioritised technologies in national legislation, policies or programmes. Low-emission technologies prioritised for power production all became subject of a Feasibility Study on Fossil Fuel Subsidy Removal by the Environment and Finance ministries. Moreover, they were considered in the Ministry of Environment's planning for an Optimal Renewable Energy Mix for Lebanon. The three prioritised renewable energy technology options, wind, PV and hydropower, all became part of the National Renewable Energy Action Plan by the Ministry of Energy and Water.

During 2015, when Lebanon prepared its Intended Nationally Determined Contribution (INDC) for the Paris Climate Summit (COP-21; after a call for INDCs by COP-20 in Lima, Peru), all four prioritised technologies in the power sector were considered as input for the INDC and were eventually included (see Figure 3).

Prioritised technologies for climate change mitigation	
Power sector	Transport sector
<ul style="list-style-type: none"> <li>• Combined- Cycle Gas Turbines</li> <li>• Wind Power</li> <li>• PV Cells</li> <li>• Hydro Power</li> </ul>	<ul style="list-style-type: none"> <li>• Fuel efficient gasoline cars</li> <li>• Hybrid electric vehicles</li> <li>• Bus technologies with dedicated lanes</li> </ul>
Prioritised technologies for climate change adaptation	
Agriculture	Water
<ul style="list-style-type: none"> <li>• Conservation Agriculture</li> <li>• Good Agricultural Practices</li> <li>• Selection of adapted varieties and rootstocks</li> </ul>	<ul style="list-style-type: none"> <li>• Rainwater harvesting from roads</li> <li>• Rainwater harvesting from greenhouse tops</li> <li>• Water users' association*</li> </ul>

\* Group of water users, pooling their financial, technical, material, and human resources for the operation and maintenance of a water system (source: [https://en.wikipedia.org/wiki/Water\\_user\\_board](https://en.wikipedia.org/wiki/Water_user_board))

Figure 2. Technologies prioritised for mitigation and adaptation in Lebanon's TNA

A similar story can be told for the technology options prioritised for the transport sector. The option of bus technologies with dedicated bus lanes was further developed in a project by the Ministry of Public Works and Transport in Lebanon, together with the World Bank and the EU. In addition, this option has been taken further in a Strategy for Public Transport, which has been developed with support from the EU. Fuel-efficient vehicles and hybrid vehicles have been incorporated, as TNA outputs, in the NAMA developed by the Ministry of Environment in Lebanon. Eventually, all three prioritised TNA options for transport landed in Lebanon's INDC for COP-21.

In its INDC, Lebanon also included technologies for adaptation (in the INDC, adaptation is tackled through mitigation actions with enhanced adaptation as co-benefit). The options prioritised in the TNA for making agriculture less vulnerable for climate change have all been included in the AGRICLIMA Regional Project by the Lebanese Agricultural Research

Institute (LARI) with support from the EU. Moreover, the options have become part of the 2015-2019 Strategy by the Ministry of Agriculture and were incorporated as options in Lebanon's INDC.

Of the TNA priority technologies for making water support more climate-proof, rainwater harvesting from roads has been included in the programme of Enhancing Adaptive Capacity of the Rural Communities in Lebanon (AgriCAL). The option of establishing water users' associations has been incorporated in the National Water Sector Strategy of the Ministry of Energy and Water, while pilot projects have been set up for rainwater harvesting from greenhouse tops. The latter two options have also landed in Lebanon's INDC.

As shown above, when preparing its INDC in 2015, for which the country had around six months' time, Lebanon used several outputs from its earlier completed TNA, both for mitigation and adaptation. Not only could Lebanon tap into already developed portfolios with priority technology options, it could also build further on the analysis of barriers and enablers for these options as done under the TNA. It is noted though that the sector coverage of the INDC is slightly broader than that of the priority sectors in the TNA. Overall, the goal of the submitted INDC for COP-21 is to cut the emissions of greenhouse gases by 15% compared to the business-as-usual scenario in 2030. In case finance, technical support and capacity building is attracted for implementation of the INDC, this emission reduction goal can be extended to 30%.

TNA Power Technologies

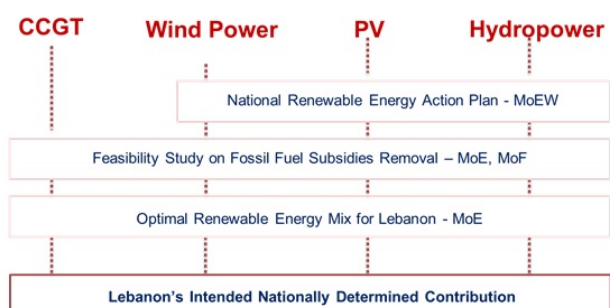


Figure 3. How TNA prioritised technologies have landed in Lebanon's INDC

# Making the New Effort Sharing Decision Compatible with the Paris Agreement

By Nils Meyer-Ohlendorf\*

**The Effort Sharing Decision was agreed in 2009 by the European Council of Ministers to establish binding annual emission reduction targets for greenhouse gases in sectors not covered by the EU emissions trading scheme (ETS). It formed part of the EU Climate and Energy Package<sup>1</sup> with energy and climate goals to be achieved during the period 2013-2020. Currently, the Council works on a renewed Effort Sharing Decision covering the period after 2020. Ecologic Institute from Germany prepared a proposal for a reformed Effort Sharing Decision, thereby considering a longer term goal of a decarbonised EU economy, as well as the challenges for the EU to comply with the Paris Agreement.<sup>2</sup>**

In October 2014, the European Council agreed on the framework for the EU climate and energy policy for the decade after 2020. A key element of it is the target of reducing greenhouse gas emissions in the EU by at least 40% by 2030 compared to 1990 levels. Sectors covered by the ETS contribute to this target by reducing their emissions by 43% compared to 2005 levels. In non-ETS sectors, emissions need to be reduced by 30%.<sup>3</sup> Achieving the latter targets is supported by the Effort Sharing Decision (ESD). Under the ESD, Member States have been allocated annual emission allowances (AEAs).

The European Council has specified reform of the ESD in some detail, such as enhanced flexibility<sup>4</sup> and a new target system, where all Member States will be required to reduce or to stabilise emissions. Other essential design elements of the current ESD will stay

in force after 2020, notably the existing mechanism of setting national targets will continue. The ESD consists in particular of national targets, reporting requirements, compliance rules and flexibility options, but does not specify how Member States should reduce emissions. The ESD reform has been supported by a stakeholder consultation from 26 March to 18 June 2015. The legislative proposal on ESD reform is expected to be published by the Commission in summer of this year.

## Support meeting long term targets Paris Agreement

The reform debate will have to take account of the Paris Agreement, which strengthens considerably the case for an ambitious and robust 2030 ESD. It also obliges Parties to aim for peaking emissions as soon as possible, and to climate-neutrality in the second half of this century. With a responsibility for about 60% of the overall EU emissions, non-ETS sectors will have to play a critical role in achieving these goals.

In light of these long-term climate challenges, it is proposed that the new ESD should include long-term targets for 2050 and beyond. This would help translate into EU law what the EU has already accepted with the adoption of the legally binding Paris Agreement. According to estimates by the European Commission, an ESD long-term target, for non-ETS sectors would require emission reductions of around 70% (compared to 2005) if the EU were to reduce emissions by 80% in 2050. In case the EU adopts a higher long-term target in the range of 90-95%, the ESD target must be adjusted accordingly. To meet these long-term targets, Member States will have to

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<sup>1</sup> [http://ec.europa.eu/clima/policies/strategies/2020/index\\_en.htm](http://ec.europa.eu/clima/policies/strategies/2020/index_en.htm)

<sup>2</sup> This article is a shortened version of the paper "Proposals for Reforming the EU Effort Sharing Decision."

<sup>3</sup> As another important decision, the European Council also agreed on a target of at least 27% for renewable energy and energy savings by 2030. The Council also agreed on an EU ETS reform, which includes a linear reduction path of annually 2.2%.

<sup>4</sup> European Council (2014): European Council Conclusions, 23/24 October 2014. EUCO 169/14, para. 2.12.

increase their reduction efforts drastically. According to the European Environment Agency (EEA), reaching the 2030 reduction target of -40% requires average annual reductions of about 1.4% (compared to the average annual reduction of about 1% achieved between 1990 and 2015).<sup>5</sup> To reach reductions of -80% by 2050, in contrast, annual reductions of 3.3% are needed between 2030 and 2050. Achieving a 95% decrease in 2050 requires annual reductions as high as 4.6%.<sup>6</sup> Reductions of -80% are probably not a sufficient contribution of the EU to keep global temperature increase “well below 2°C”. Underlining the size of the challenge, it is noteworthy that the EU is currently not even on track to meet its interim target for 2030.<sup>7</sup>

According to the Paris Agreement (Article 4.3), “each Party’s successive nationally determined contribution will represent a progression beyond the Party’s then current nationally determined contribution and reflect its highest possible ambition, reflecting common but differentiated responsibilities and respective capacities[...]”. Moreover, it stipulates (in Article 4.4) that “developed country Parties should continue taking the lead by undertaking economy-wide absolute emission reduction targets”. In combination, these provisions argue strongly for (1) an ambitious EU long-term reduction target and (2) credible reduction pathways. With the exception of the ETS, EU law does not have such a frame. These provisions also make a convincing case for continued EU leadership in climate policies, both before and after 2030.

In strict legal terms, the Paris Agreement will only require action after entry into force (full ratification is expected between 2017 and 2019). However, as the 2030 ESD is essential for the implementation of the Paris Agreement, the EU is effectively bound to reform the ESD in a way that helps bring about the required drastic emission cuts. In addition, the Paris Agreement (Article 4.16) requires Parties that reduce emissions jointly (such as the EU) to notify the

UNFCCC secretariat of “the emission level allocated to each Party within the relevant time period, when they communicate their nationally determined contributions”. For these reasons, ESD reform must be guided by the Paris Agreement, despite the fact that it has not yet entered into force while ESD reform is under way.

### Comprehensive review

To help ensure achievement of the long-term targets of the Paris Agreement, it is recommended that the new ESD contain a comprehensive review clause, which makes the review mandatory and would empower (possibly even require) the Commission to propose target adjustments and additional measures, if necessary. Again, the main backdrop for this proposed reform is the review process foreseen in the Paris Agreement, in particular the ‘Facilitative Dialogue’ to be held in 2018 (requesting countries to communicate or update by 2020 their contributions to mitigating climate change) and the ‘Global Stocktake’ scheduled for the first time for 2023 (based on nationally determined contributions by countries under the Paris Agreement). For the non-ETS sectors, the ESD should prepare for both review rounds under the Paris Agreement. As the reformed ESD may not have entered into force in 2018, the current (‘old’) ESD will remain the legislative frame of the EU for the review under the Facilitative Dialogue.

The reformed ESD, however, is recommended to enable review of climate change mitigation actions in non-ETS sectors based on the outcome of the Global Stocktake. In case stronger contributions by the EU are required to meet the goals of the Paris Agreement, the new ESD should be able to review current contributions and propose adjustments accordingly. Therefore, it is proposed that the review under the new ESD takes place after the stocktake but before the EU’s subsequent nationally determined contribution (NDC), e.g., in the spring of 2024 and every 5 years thereafter. The review requires the Commission to explore and elaborate target

<sup>5</sup> EEA (2015): Trends and projections in Europe 2015 — Tracking progress towards Europe’s climate and energy targets.

<sup>6</sup> See footnote 5.

<sup>7</sup> EEA (2015): Trends and projections in Europe 2015 — Tracking progress towards Europe’s climate and energy targets: “According to current Member State projections, a reduction of EU GHG emissions by 27% (on the basis of existing mitigation measures) up to 30% (accounting for planned national measures) could be achieved by 2030, compared to 1990 levels. These projected levels are not sufficient to meet the 40% target by 2030, however the projections do not take into account new policy proposals, still being discussed in the EU to enable the achievement of this 2030 target.”

adjustments and additional measures necessary to ensure the EU meets its 2050 ESD target and Paris Agreement requirements.

The direct importance of the ESD for the Paris Agreements also implies that the scope of review will also become broader and more longer-term oriented than is currently the case. Moreover, the review should also address the effects of the ESD on long-term competitiveness and innovation, rather than only ESD implementation and short-term competition.

To support transparent and credible decision making, it is recommended that the review be based on a comprehensive (published) report on ESD implementation and the adequacy of targets by the EEA or another independent body. The report may include proposals for target adjustment, if deemed appropriate. The new review procedure should require the Commission to provide explicit reasons if it intends to deviate from the report and its proposals for target adjustment. As an alternative, the ESD review could include elements of the supervision of financial markets, where the European Securities and Markets Authority (ESMA) has very significant influence.

In light of these proposed changes, it is recommended that the ESD have a new name that adequately reflects its purpose to set a frame for the decarbonisation of the sectors not covered by the ETS. Possible names are: "Regulation on the framework for the decarbonisation of the sectors not covered by the ETS" or, highlighting the strong link with the Paris Agreement, "Regulation on the framework for ensuring climate neutrality of the sectors not covered by the ETS". What is in name, but, at least, it should reflect better what is aimed at than the ambiguous name of "effort sharing decision" does.

### European Project Mechanism

Another aspect of the proposed ESD reform, although less far-reaching as the reforms on long-term target setting and comprehensive review in light of the Paris Agreement, is the inclusion of a new article on flexibility instruments. This would maintain the existing flexibility instruments, such as borrowing, banking, and AEA transfers between Member States, but would additionally provide for an opportunity to introduce auctioning of AEAs, so that Member States can buy and sell AEAs on a central platform and a one-off ETS link (under restrictions, Member States could use ETS allowances for meeting ESD targets).

In addition to these flexibilities, a European Project Mechanism is proposed through which Member States could comply with the ESD commitments by purchasing emission reduction from projects carried out in non-ETS sectors and add these to their AEAs. In the proposed reform, this project mechanism only connects non-ETS sector commitments with non-ETS emission reduction projects and credits. It replaces the current Article 24a of Directive 2003/87/EC, which potentially enables ETS installations to purchase emission reduction credits from projects in non-ETS sectors.

### Keep good ESD elements

In addition to these elements of reform, it is recommended to maintain in the new ESD the best elements of the current ESD, including annual and linear reductions and taking corrective actions. The current ESD determines that Member States reduce emissions annually and along a linear trajectory, which is proposed to be continued for the AEA trajectory between 2021 and 2030. This trajectory not only determines the total volume of national AEA budgets but is also the basis for the ESD's annual compliance cycle. Both elements are critical for the credibility and robustness of the ESD and should be maintained.

Although the current compliance regime of the ESD has not been tested until now, it is recommended to maintain it as it strikes a good balance between ownership by Member States and independent assessment of corrective action plans by the Commission. Currently, an abatement factor is used should a Member States have excess emissions in one year: in the next year, these excess emissions are deducted from its AEA for the next year multiplied by an abatement factor of 1.08. This factor makes the system credible and, in order to strengthen the compliance regime, it could even be increased if deemed appropriate.

### Summary

In light of the Paris Agreement, it is proposed that the new ESD includes long-term targets for non-ETS sectors. For compliance with these targets, the new ESD should contain a comprehensive review clause, which broadens the scope of review and makes it more long-term oriented. Preferably, the review will be based on a comprehensive report by EEA or another independent body.

# An Early Action Model to Create Pre-2020 Voluntary Domestic Trading in Developing Countries Based on NDC Mitigation Targets

By Thomas Black-Arbeláez\*

**The signal sent by the COP-21 consolidation of the national mitigation targets in Nationally Determined Contributions (NDC) has been heard loudly and unequivocally by all the major actors interested in greenhouse gas (GHG) regulatory policies. This article presents a proposal to build on that signal in developing countries that may be interested in a stepwise, constructive evolution towards attaining their NDC targets with flexibility and economic efficiency: Early Action Domestic Markets. It aims to stimulate domestic demand, prices, and voluntary trading of domestically generated credits by allowing cost-conscious emitters to mitigate the risk of higher future compliance costs by buying and banking compliance-eligible credits today.**

The Paris Agreement devotes four pages to pre-2020 action. Section IV calls on all countries to “enhance ambition in the pre-2020 period in order to ensure the highest possible mitigation efforts under the Convention by all Parties”, and to “strengthen the existing technical examination process in the 2016-2020 period to accelerate the development and dissemination of policies and technologies with high mitigation potential”.

Acutely aware that their governments have announced ambitious GHG reduction targets, producer associations are now manifesting their concerns regarding new regulatory risks, high compliance costs and their effects on competitiveness. Expectations have been set.

## Early Action Domestic Markets

Early Action Domestic Markets could begin immediately with a simple regulatory signal, at low administrative cost, building on existing UNFCCC and

Many of today’s carbon trading systems benefitted from early crediting policies. Businesses support these programmes, since they can gain market experience and contain future price exposure.

Thomas Black draws on these examples to offer a useful model for developing countries as they prepare to implement NDCs. Given their familiarity with the CDM, he suggests that they establish voluntary programs for local businesses to buy domestic CERs early and bank them for future use. The model assures environmental integrity by respecting simple guidelines to honor the Paris Agreement’s provisions on double-counting. This is worthy of serious consideration, given the environmental and economic benefits.

**Dirk Forrister - President and CEO at International Emissions Trading Association**

domestic institutions and procedures for registry and accounting of GHG emission reductions. It can take several years to prepare, design, negotiate with regulated sectors, achieve appropriate legislation, build institutional capacity and set up the monitoring, reporting and verification procedures (MRV) to implement new comprehensive nation-or-sector-wide regulations (emission trading, pollution taxes, direct regulations, etc.) of the scale needed to address the NDC targets. While all these processes are being methodically developed with the key stakeholders, this early action model can be functioning and generating large direct and collateral benefits from mitigation investments.

A simple regulatory decree would be sufficient to provide the certainty required to stimulate domestic trading, and would include a text as follows: “Under whichever mitigation policy and programmes that (country name) may adopt to comply with the post-2020 Paris Agreement NDC targets, the types of carbon credits that will be eligible for compliance will include credits from UNFCCC-approved and registered programmes of activities (POAs), Clean Development Mechanism (CDM) portfolios, and/or creditable nationally appropriate mitigation actions (NAMAs),

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among others, from emission reduction and forestry sequestration projects operating within the boundaries of (country name)."

These credits will be bankable: eligible credits can be banked and freely traded among interested parties until their use for domestic compliance or international sale in the future. All credit transactions should report prices upon credit delivery in order to provide transparent price information to the market. Once used for compliance or sold abroad, credits will be eliminated from the national registry to prevent double counting."<sup>1</sup>

Banking credits for future use has become a common element of almost all formal trading systems, usually because it can help reduce price volatility from year to year.<sup>2</sup> The UNFCCC director of carbon markets has supported the use of pre-2020 credits for post 2020 compliance.<sup>3</sup>

### **This model builds on prior domestic programmes and investments**

For countries that have invested heavily in the CDM and have been working on the creation of domestic voluntary carbon markets, the NDC target represents a golden opportunity to activate those markets now. For example, in Colombia, the Mercantile Exchange has been working to create a "voluntary trading platform for mitigation of greenhouse gases" with funding from the GEF, but there has been little or no trading activity. A positive regulatory signal providing certainty regarding the compliance eligibility of domestic credits for post 2020 targets could jump-start trading on this type of platform as soon as the new regulation is published.

### **Who are the buyers?**

Domestic firms from all NDC sectors with high internal abatement costs could begin buying domestic credits now, while they are abundant and inexpensive. This would minimise the risk of expected higher prices or

compliance costs in the future, when the nation-or-sector wide formal programmes are expected to be implemented. Emission Reduction Purchase Agreements (ERPAs) at improved prices would then support the investment needed to implement many currently stranded projects, POAs and NAMAs.

Emitters from all sectors could begin to mitigate at the same marginal cost, following the price signals reported from domestic trading. This would level the compliance cost playing field and avoid unnecessary distortions to competitiveness of firms and sectors active in international markets. Early action could create many more transactions and allow price formation in the pre-2020 period that would be key for abatement planning for the post-2020 period.

### **Flexibility and cost-effectiveness**

Many of the most cost-effective, ready-to-implement, UN-audited and well-monitored mitigation options are the registered CDM projects and POAs in developing countries. Some countries also have creditable NAMAs ready to implement. This proposal allows the governments to use market forces to secure the country's most cost effective mitigation options for meeting their national targets.

### **The climate benefits are clear**

Mitigation would begin now, instead of waiting several years for the formal national/sectoral regulatory programmes to be designed, negotiated and implemented. UNEP's 2014/15 Emissions Gap Reports discuss the technical and scientific reasons to support early action<sup>4</sup>: delaying mitigation action and allowing higher emission levels in the near term means that faster and more costly emission reductions are required later to stay within the same emissions budget. Delays cause the lock-in of carbon intensive infrastructure and fossil-based productive stock and resource use. The lock-in effect equates to lost opportunities for energy efficiency.

Worse, delays can slow the transformation of the energy system, lead to higher overall costs and economic challenges, reduce societal choices and lead to higher climate risks. Delays cause society to postpone or forgo the collateral benefits of mitigation investments, often related to adaptation and resilience.

### **Pre-2020 Early Action experience would help to avoid regulatory mistakes**

Even the world's best trained and well-funded regulatory institutions have had problems in full scale

<sup>1</sup> Voluntary Cancellation of CERs could be accumulated and used for future compliance as well: <https://cdm.unfccc.int/Registry/index.html>

<sup>2</sup> See EDF, [Banking Provisions in leading emissions markets](#).

<sup>3</sup> Bloomberg news, 2015/05/29, "UN Fosters Use of Pre-2020 Carbon Credits for Climate Plans".

<sup>4</sup> UNEP, [The Emissions Gap Report 2014](#).  
UNEP, [The Emissions Gap Report 2015](#).



deployment of major market-based programmes. For example, the EU ETS over-allocated allowances during their first two years, resulting in a price crash in April 2006. It also suffered from major price volatility during several years. It experienced registry security problems including hacking and credit theft. Early Action Domestic Trading would provide valuable experience at low cost and risk, allowing developing countries to identify problems before deploying large-scale national/sectoral formal regulatory programmes.

### One of several complementary compliance programmes

Like California's AB32 Cap and Trade programme, a post-2020 national mitigation regulatory structure in developing countries could include various compliance options, including in-house abatement, state-issued allowances, eligible credits from projects/POA/NAMA, direct controls, a carbon tax, and/or linking to other regional or international trading systems.

The California programme provides a very useful model for Early Actions, as it blends Early Mover Offsets from project-based mitigation into their Cap and Trade programme. The Early Actions model proposed in this article could build on the California experience and guidelines.<sup>5</sup>

### UNFCCC rigour for MRV

Under the Paris Agreement, rigorous and transparent MRV procedures will be required in the regulatory programmes that stand to be developed to meet the NDC targets. However, new MRV systems are time-consuming and expensive to plan, negotiate, build and operate. Meanwhile, registered POAs and CDM projects and all have MRV designed with UNFCCC methodologies and audited by UN-accredited DOEs. Most NAMAs are also designed with rigorous MRV. As Christiana Figueres stated at COP-20, "I am very much a CDM enthusiast, and my enthusiasm is not just because of the potential offsetting, or the market part of it, but because it is such a valuable tool in verifying mitigation".<sup>6</sup>

### UNFCCC rigour in baseline estimation

The global community will review future emission baselines presented by countries to develop their NDCs in order to ensure that the new national targets are real and not illusory. POAs and CDM projects all

have baselines that were prepared and audited using rigorous UNFCCC methodologies, which give them reliability for national accounting.

Once the permanent national/sectoral compliance programmes are implemented post-2020, the individual POA and CDM baselines could be reduced by the amount of the new national/sectoral mitigation targets. Reductions below the new baselines could continue to be traded and sold in the domestic and/or international markets.

### No double-counting, low administrative costs

The CDM Registry issues CERs, documents trade, and eliminates credits from the country registry when used for compliance or when cancelled voluntarily. It maintains accounts for each participant and each Party and tracks transactions from CER issuance until used for compliance. No double counting is allowed. The UNFCCC will continue to operate the registry, as indicated in the Paris Agreement Decision on Guidance Relating to the CDM.<sup>7</sup>

In the pre-2020 period, credits sold to other countries will count against the buyer country commitments, while those sold domestically will count towards domestic commitments when used for compliance.

Developing countries can begin domestic voluntary CER trading and monitor activity and holdings on the UNFCCC registry now, without incurring major domestic administrative costs for completely new registries under the NDC.

### Much needed confidence can be built with the productive sectors

In many developing countries, the governments led the productive sectors and firms to the CDM and POA, and many responded with major mitigation investments, only to see them wilt as international demand and prices fell. The Early Action proposal would respect those early mitigation investments. The lists of private and public companies that invested early through the CDM, POA and NAMA programmes include many of the best and most progressive companies in developing countries, environmental leaders. Early Action Trading would allow regulators to re-build trust with these leaders by respecting their investments and creating a cost-minimizing framework for compliance.

It could be uneconomic for a government to fail to signal that domestically generated credits will be an eligible compliance option in the future. Governments

<sup>5</sup> California Early Actions Offsets Programme.

<sup>6</sup> Speech by Christiana Figueres.

<sup>7</sup> Guidance Relating to the CDM: FCCC/KP/CMP/2015/L.4.

could mitigate the risk that cost-effective domestic credits be exported to other countries or to Airlines under the coming ICAO pact, leaving only more expensive options for domestic compliance accounting. The Internationally Transferrable Mitigation Outcomes component of the Paris Agreement makes this an explicit possibility.

**Low carbon development with high collateral benefits could begin now**

By creating domestic demand and improving credit prices, many registered renewable energy, energy efficiency, clean transport, and land use change projects which have been uneconomic without the additional carbon market value, would become economically viable. This should improve technology transfer, local employment, and productivity. Of great importance is that it would generate the environmental and social co-benefits of the domestic CDM/POA/NAMA portfolios sooner rather than later.

The World Bank Partnership for Market Readiness has published a comprehensive report that could guide implementation. "Options to use existing international offset programmes in a domestic context"<sup>8</sup> covers environmental quality considerations, legal issues, regulatory options, and technical topics that can guide

<sup>8</sup> World Bank Partnership for Market Readiness

policy makers in implementing this Early Action trading model. Section 3.3 in the report (GateKeeping) can ensure the environmental quality of offsets that would be eligible for compliance purposes. Under GateKeeping, the UNFCCC certifiers remain responsible for oversight and enforcement of emissions reductions, verifications, credit issuance and registry functions, while the host government determines which project types are eligible for compliance. These guidelines greatly reduce Early Action start-up time. Currently, the EU, South African, Mexican and South Korean domestic offset programmes use variants of the GateKeeping scenario.

**End note**

In order for this model to function, the country should have a significant CDM/POA/NAMA portfolio. The government must have consolidated its NDC target and be formally planning its national/sectoral compliance programmes for the post-2020 period. All key economic and regulatory actors must be convinced that those large scale programmes will be implemented and will impose compliance upon them in the future. It is simply the GHG-emitting firm's expectation of real, higher future compliance costs, that would drive the pre-2020 voluntary demand for currently abundant, low cost domestic credits.

## GreenEcoNet – Policy Lessons Based on Success Stories

**On 26-27 May of this year, the EU-funded project GreenEcoNet held its third Annual Meeting in Brussels (with over 120 participants). The main product of the project is an online platform to connect small- and medium-sized enterprises (SMEs) for a green economy.**



Realising that over 99% of European business consists of SMEs, the project team took it upon them to enhance exchange of information, including success stories, among SMEs. Presently, the GreenEcoNet.eu platform contains 83 stories of SMEs that have successfully greened their business. The online [GreenEcoNet.eu](http://GreenEcoNet.eu) network currently consists of 143 companies.

The focus of GreenEcoNet.eu has been twofold:

1. Collect success stories: which SMEs have

successfully greened their business operations, why and how have they done this?

2. Communicate these stories with other SMEs as easily accessible learning material.

An important rationale for GreenEcoNet has been the observation that in Europe a growing number of SMEs have invested in green solutions for their business. Reasons for that are, for example, the need to meet consumer demand for green goods and services, efficiency gains that can be reaped from greening



**Figure 4.** How best practice from green SMEs can inspire other SMEs

business operations or 'green' legislation. At the same time, it is acknowledged that the majority of SMEs have not yet or only partly been able to green their business. Possible reasons for that can be:

- Lack of information about success stories elsewhere or negative perceptions about costs, etc.,
- Obstacles in obtaining funding for the required investments, which can vary from not knowing that funding exists to not knowing how to apply for funding, or experiencing difficulties in applying for funding as an SME,
- Lack of willingness or interest among customers to pay extra for greener products, or
- Insufficient interest from other actors in the value chain, e.g., if the value chain leads to an end product which is not green, then there is little incentive for actors to produce their intermediate goods in a green manner.

Finally, a third category could be identified with SMEs that have no interest in greening their business, as this is not in their interest nor in the interest of their business environment. This categorisation is summarised in the diagram above.

Green SME success stories have been posted at GreenEcoNet.eu to inspire other SMEs in terms of how to overcome barriers to greening businesses and what have been decisive enablers for that. These online case studies and lessons have also been communicated with existing 'offline' SME networks in Europe, so that experience sharing is not limited to

online networking, but optimised by making online and offline networks complementary.

Based on posted case studies ('success stories') the GreenEcoNet team was able to distill key insights for the benefit of a number of policy areas, such as:

- the possible contribution of SMEs to a circular economy.
- significant contribution of green SMEs in the transportation sector to reducing greenhouse gas emission in this sector not covered by the EU ETS. A specific achievement in this policy framework was to identify what regulatory and other stimulating measures could be taken to enable scaling up green SME activities in transportation
- the specific link between greener SMEs and incorporation of the Energy Efficiency Directive in different Member States.
- the direct link between finance needs for green SMEs and innovative tools that the finance sector has developed.
- effective networking structures and tools to support SMEs in greening their businesses (see also next pages 12-13).

For each of these policy topics, policy dossiers and briefs were developed and disseminated to EU private and public sector decision makers. These can be downloaded from:

[www.greeneconet.eu/news-blogs](http://www.greeneconet.eu/news-blogs)

# The Importance of Networking for SME Innovation in a Green Economy



By Erwin Hofman and Chris Hopkins\*

**Amongst European Union (EU) policymakers it is widely recognised that “innovation is vital to European competitiveness in the global economy” (EC, 2016a) and that “small and medium-sized enterprises (SMEs) are the backbone of Europe’s economy” (EC, 2016b). These two key assumptions underlie the EU’s entire economic policy framework, and therefore imply that it is of high priority that European policymakers encourage both continuous innovation processes and the establishment and growth of SMEs.**

With an increasing importance placed on innovation and SMEs, and specifically on innovation within SMEs, networking among these small businesses is crucial. The OECD (2010) argues that business networking forms the basis of 21st century innovation processes, but for SMEs networking may be even more important due to limited internal resources for innovation. Networking allows the combination of innovation resources and ideas from several SMEs (and other organisations) in order to increase their collective innovative capacity, allowing each individual SME to benefit.

The evidence shows that firms belonging to networks are more innovative than isolated firms. This is because networks result in “(...) higher flexibility, a greater ability to change, more fluid knowledge flows and the presence of a large variety of relationships among members” (Ceci & Iubatti, 2012, p. 565). For SMEs specifically, as Behncke (2015, p. 1) indicates, “(...) engaging in external collaboration thus provides chances for them [SMEs] to overcome the limits of their smallness”.

The definition of ‘SME network’ is not clear-cut, as they come in a wide variety of shapes and sizes. Based on a range of typologies of business and SME networks (Valkokari & Helander, 2007; Möller, et al., 2005; Johnston, et al., 2006), five criteria are particularly helpful in classification of SME networks:

1. **‘Direction’ of networks:** Vertical supply chain networks are the “closest (and friendliest) set of networks SMEs are engaged in” (Tomlinson and Fai, 2013, p. 318). SME networks can also be formed horizontally among SMEs. Such networks, dubbed ‘co-opetition’, are the arrangement whereby competing firms collaborate.
2. **Type of participants:** Networks may include only businesses, but there are also other models which include third parties such as research institutes and governmental agencies. A key model in this regard is the Triple Helix model, which advocates knowledge-based economic development through synergies between three poles: business, government, and academics.
3. **Territory:** For example, local, regional, national or international networks.
4. **Product or services offered, and customers served:** Thorelli (1986) states that, for a network to exist, there needs to be at least a partial overlap in the ‘domains’ of the participating organisations. The ‘domain’ of an organisation consists of the product/service offered, the customers served, the functions performed, the territory, and time. If there is a total overlap of domain among organisations, there is a case of direct competition, and a network may be a trade association. In case of partial overlaps, other network types are conceivable.
5. **Functions performed:** The aim of the network. Möller et al. (2005) have classified networks along a continuum based on value systems. In this classification, networks range from clearly

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specified and relatively stable value systems on the one hand (where the aim of the network may be, e.g., demand forecasting, cross-firm management systems, and incremental process changes), to future-oriented value systems (aiming at, e.g., radical innovation and visioning).

As part of the [EU-funded GreenEcoNet project](#), several case studies of SME networks have been analysed, and interviews with both network managers and SMEs have been held. This demonstrates in practice that networking among SMEs takes place in many different ways. Some of the diverse types of networks include local 'Circles of Trust' (see Box 1), supply chain partnerships, and online networking platforms. The diversity of network types, that all aim to help SMEs' transition to a green economy model, shows that policy should not be aimed at the creation or support of a particular type of network. Policy should rather focus on increasing mutual interaction and networking among SMEs, through whichever type of network, in order to increase their innovative capacities.

### Box 1. Example of an SME network type: local 'Circles of Trust'

Duurzom is an organisation in the Netherlands that aims to connect SMEs that have genuine 'sustainable intentions'. It helps these businesses to turn these intentions into an agenda for sustainability, with concrete actions. Duurzom's main vehicle for that are a range of local networks ('Circles of Trust') in which small groups of SMEs share their sustainability agendas and help each other to realise them. Although SMEs can 'green' their business on their own, according to Duurzom co-founder Marten Imelman, networking will make this "easier, quicker, and cheaper". Such networking becomes more effective when the members are geographically near each other, which is why Duurzom has adopted the approach of 'Circles' at local level. Members can be from vastly different sectors (and thus even from different value chains), which actually makes networking and information exchange easier as no or fewer competitors are involved in one 'Circle'.

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Even though there are many different types of SME networks, ranging from local business clubs to international federations, the common element is the establishment of ties across businesses. Such ties are a direct source of innovative activity, since firms find it easier to access new ideas, and they can use the flow of knowledge from others to strengthen their internal innovation. It is therefore important to encourage the development and strengthening of networks, independent of which types of networks these are. Innovation and 'greening' of SMEs can be strengthened through their involvement in multiple networks, and it is not necessary to select a specific network type as ideal. However, all types of networks have their specific strengths and weaknesses, which makes that policy-makers should pay close attention to their specific objectives when selecting a specific type of network to support.

### Read more

The GreenEcoNet policy brief can be downloaded from JIN's website: "[Networking for SME innovation in a green economy.](#)"

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## Reports

**Bruyn, S. de, E. Schep and S. Cherif, 2016. Calculation of Additional Profits of sectors and Firms from the EU ETS, Delft, CE Delft, the Netherlands**

This study has calculated the additional profits that sectors and companies have made from the EU ETS from 2008 to 2014, distinguishing between three types of profits:

1. Profits from overallocation of free emission allowances. In many sectors/countries, free allowances have been granted in excess of verified emissions, allowing industries to generate additional profits by selling this surplus in the market.
2. Profits from using CDM/JI credits for compliance. Companies were entitled to a certain extent to use cheaper CDM/JI credits for compliance. This has created additional profits since many companies have used these credits for compliance and sold the saved freely obtained allowances on the ETS market.
3. Profits from passing through the opportunity costs of freely obtained allowances. There is ample empirical evidence that companies have been able to pass through (part of) the carbon costs in product prices. Although the allowances were granted free of charge, the majority of sectors were thus able to pass through the opportunity costs of these allowances in product prices, thus making so-called windfall profits.

Profits in each of these categories from 2008 to 2014 have been calculated for 15 sectors (in general the most polluting ones) in 19 countries. The analysis in this study differs from those in earlier studies on this subject by a correction for allocation of waste gases to the iron and steel industry, which have been transferred to the electricity sector on a statistical basis.

**Da Silva Bastos Martins Barata, J.P., F.C. Spors, P.M. Kennedy, A. Platonova-Oquab, H. Gadde, 2016. Carbon credits and additionality: past, present, and future. Partnership for Market Readiness technical note; no. 13. Washington, D.C., World Bank Group.**

The World Bank's Partnership for Market Readiness (PMR) brings together developed and developing countries to build readiness for carbon market instruments to support cost-effective reductions in

greenhouse gas emissions. As part of the PMR's Technical Work Program, this brief focuses on the issue of additionality. The PMR's offset and crediting working group identified the topic as an area of particular relevance to inform countries about the consideration of additionality in the context of new crediting mechanisms that they are exploring. The analysis has three key objectives, to:

- clarify the concept of additionality and its significance for crediting mechanisms;
- describe the different approaches that have been used to demonstrate or test additionality; and
- explore the implications of the evolving carbon markets on the application and importance of additionality.

**Fatheuer, Th., L. Fuhr, B. Unmüßig; preface by Tim Jackson (2016). Inside the Green Economy - Promises and Pitfalls, Heinrich Böll Stiftung, Berlin, Germany.**

The economic and ecological bases of a general prosperity are in danger, the gap between rich and poor is widening. The concept of the Green Economy offers a new model, based primarily on large-scale technological solutions like Geoengineering. But the Green Economy cares little about politics, barely registers human rights, does not recognize social actors and suggests the possibility of reform without conflict. It suggests that the world as we know it can continue with green growth. But can efficiency be a solution if it results in even more consumption? Is it possible to save nature and protect the global climate by putting a price on the services they provide? Should we rely on magical technological solutions to save us? The book "Inside the Green Economy - Promises and Pitfalls" puts the Green Economy to the test, discusses its promises, describes actual consequences and names its blind spots. It is an invitation to embrace radical optimism to find transformative strategies for a liveable future.

**Global CCS Institute 2016, The Global Status of CCS. Special Report: Introducing Industrial Carbon Capture and Storage, Melbourne, Australia.**

This report summarises 17 carbon capture and storage (CCS) projects across sectors including natural gas processing, fertiliser manufacturing and hydrogen production. The report highlights that one quarter (25 percent) of the world's CO<sub>2</sub> emissions, or 8.5 gigatonnes, result from these, and other industrial sectors such as iron and steel, cement production and petrochemicals refining.

**Meyer-Ohlendorf, N. (with contributions from R. Bodle, M. Duwe, E. Roberts and A. Frelih-Larsen), 2016. Proposals for Reforming the EU Effort Sharing Decision, Ecologic Institute, Berlin, Germany.**

With the European Council's conclusions of October 2014, the debate on the reform of the Effort Sharing Decision (ESD) has begun. The adoption of the Paris Agreement (PA) sets a new and critical benchmark for ESD reform. The European Commission is expected to present a legislative proposal for a new Effort Sharing instrument – not necessarily a decision – in the summer of 2016. To contribute to its ultimate objective of decarbonising large parts of Europe's economy, Ecologic Institute recommends a number of reform elements which are described in this report and which deal with: Long-term target for 2050 and beyond, Comprehensive Review, including target adjustment, Flexibility, Use of international offsets, Credits from Article 24a ETS Directive, Planning and Reporting, LULUCF, as well as the Legal form and a new name for the Decision.

**Partnership for Market Readiness (PMR) and International Carbon Action Partnership (ICAP). 2016. Emissions Trading in Practice: a Handbook on Design and Implementation. World Bank, Washington, DC. License: Creative Commons Attribution CC BY 3.0 IGO**

To maximize effectiveness, any ETS needs to be designed in a way that is appropriate to its context. This hand-book is intended to help decision makers, policy practitioners, and stakeholders achieve this goal. It explains the rationale for an ETS and sets out the most important steps of ETS design. In doing so, it draws both on conceptual analysis and on some of the most important practical lessons learned to date from implementing ETSs around the world, including the European Union, several provinces and cities in China, California and Québec, the Northeastern United States, Alberta, New Zealand, Kazakhstan, the Republic of Korea, Tokyo, and Saitama.

**Shishlov, I., R. Morel and V. Bellassen, 2016. Compliance of the Parties to the Kyoto Protocol in the First Commitment Period, Climate Policy.**

This article provides an ex-post analysis of the compliance of the Parties to the Kyoto Protocol during the first commitment period (2008–2012) based on the final data for national GHG emissions and exchanges in carbon units that became available at the end of 2015. On the domestic level, among the 36 countries that fully participated in the Kyoto Protocol, only nine countries emitted higher levels of GHGs than

committed and therefore had to resort to flexibility mechanisms. On the international level, i.e., after the use of flexibility mechanisms, all Annex B Parties are in compliance. Countries implemented different compliance strategies: purchasing carbon units abroad, stimulating the domestic use of carbon credits by the private sector and incentivizing domestic emission reductions through climate policies.

**Viola, E. and L. Basso, 2016. Wandering Decarbonization: the BRIC Countries as Conservative Climate Powers, RBPI, 59(1): e001, 2016**

In this article the role of China, Russia, India and Brazil in the climate regime, the trajectory of their emissions, their domestic policies and their international commitments are discussed. It is argued that, despite their responsibility in causing the problem, they have been conservative forces in the climate regime. The objective of the paper is to offer an analysis of the decarbonization in the BRIC countries. The article is divided in three parts. First, the profile of the countries' emissions is drawn, in order to identify which are their main emitting sectors. Second, due to the weight of energy supply in global GHG emissions, the existence of energy related climate change mitigation policy is checked, as well as its directions concerning low carbon energy sources and energy efficiency. Third, the trajectories of the BRIC countries in the climate regime to date are outlined. The analysis provides the reason why these countries are classified as conservative powers in the climate regime and indicates it is unlikely that their conservative status will change in the near future.

**Wolters, S., D. Tänzler, G. Stang, T. Ribera, 2016. Climate Change and European Foreign Policy After COP21, Climate Diplomacy, Institute for Security Studies, IDDRI, Adelphi**

Given the transversal, and universal, nature of the climate challenge, what priorities should shape foreign policy action on climate issues in the decade ahead? What should be the focus of European climate diplomacy? The European Union Institute for Security Studies (EUISS), the l'Institute du développement durable et des relations internationales (IDDRI) and Adelphi organized a meeting of senior experts and practitioners to review and build on the outcomes of COP21. This Brief summarizes important ideas put forward during the discussions for using European foreign policy tools to address climate mitigation, adaptation, and finance, for responding to climate-related security and migration risks, and for improving EU climate diplomacy.

## JIQ Meeting Planner

### 11-13 July 2016, Palacio Miramar, San Sebastian, Spain

Climate Change Challenges after Paris Agreement – BC3 Summer School  
 Contact: [summerschool.bc3research.org](http://summerschool.bc3research.org)

### 26-28 July 2016, Akwa Ibom State, Nigeria

First Akwa Ibom State Climate Change and Clean Energy Mega Summit/Expo  
 Contact: [robinson@aksclimatesummit.org](mailto:robinson@aksclimatesummit.org)

### 5-7 September 2016, Jeju Island, Republic of Korea

Asia Pacific Carbon Forum 2016  
 Contact: Nathalie Sneider, UNFCCC Secretariat, [nsneider@unfccc.int](mailto:nsneider@unfccc.int)

### 20-22 September 2016, Oxford, UK

1.5 degrees: meeting the challenges of the Paris Agreement – International Conference Oxford University  
 Contact: [eci25@eci.ox.ac.uk](mailto:eci25@eci.ox.ac.uk)

### 20-22 September 2016, Golden, CO, USA

2016 Climate Knowledge Brokers Workshop  
 Contact: [the CKB Website](http://theCKBWebsite.com).

### 7-18 November 2016, Marrakech, Morocco

COP-22, CMP-12, SBI-45, SBSTA-45  
 Contact: [UNFCCC meeting planner](http://UNFCCCmeetingplanner.org)



JIQ Magazine (Joint Implementation Quarterly) is an independent magazine with background information about the Kyoto mechanisms, emissions trading, and other climate policy and sustainability issues.

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