Final report
Sustainable Biomass Import regulation
This study was carried out in the framework of the Sustainable Biomass Import regulation, with financial support from the Ministry of Economic Affairs.
Context and reasons to start the project

Why did you start the project?
What is the context of the project?
E.g. a description of the local circumstances, important stakeholders, political environment, geographical situation.

The context of the project
In 2007 Eneco has made a principal choice for a sustainable strategy. This choice of strategy implicates that Eneco only invests in sustainable energy sources like wind, solar and biomass. The project in Vietnam, which was financially supported by the Ministry of Economic Affairs, was related to the last mentioned energy source: sustainable biomass.

The original plan was to control the whole chain of biomass delivery (from source to final delivery to the plant). If Eneco was in control of the whole chain, we would be able to optimize the economics. In this business model Eneco could also guarantee the supply of biomass. This would result in guaranteeing the profitability of the biomass plants located in the Netherlands and minimize the (financial and reputational) risks, as was the idea.

Eneco saw a large potential of wood waste which are produced by the furniture sector in Vietnam that could potentially be exported. The main challenge was to design the supply chain in such a way that Eneco could guarantee the sustainability of the whole biomass chain. The plan was therefore that Eneco would go further than NTA 8080 in the sense that this project would look further back into the chain than strictly needed to comply with NTA8080 requirements for biomass from residues.

In this context Eneco sought a partner. A natural choice was IKEA. This party has a lot of know how and experience with sustainability. IKEA works with strict sustainability rules for the raw materials the use and strict requirements to processing thereof.

Local expertise was hired to ensure that all aspects of the projects were covered. The potential partners, with whom Eneco collaborated, were also all experienced in building and operating pelletizer plants.

The initial goal of Eneco was to collect 150.000 ton wood waste (being saw mill residues), to pelletize the wood waste and to transport this amount to the Netherlands where it would be used as fuel for biomass plants. The certification question was of course a key element in the project plan.

Local circumstances
Vietnam is one of the biggest producers of furniture in the world. The fact that most part of the industry is concentrated within a field of 100 kilometres from the commercial capital city "Ho Chi Minh" is exceptionally. The production of furniture creates wood waste in the form of saw dust, shavings and off cuts.

The offtakers of the products from the furniture producers are usually western retailers. These customers, like Wallmart, IKEA and Carrefour, demand that the furniture producers work with sustainable FSC certificated wood, a chain of custody and western working conditions.

The saw mills / furniture producers also use, besides FSC wood, non-certificated wood. This is a result of the fact that Vietnam does not yet have an own certification system and that not all offtakers have the same demands. At the moment the national public administration develops such a system, but they do not expect that it will be implemented on short term. The implication of this situation is that the majority of the FSC certificated wood that nowadays is available in Vietnam, needs to be imported.

At the moment they allocate little to no value to the wood waste. A large part of saw waste is being dumped in forests. In addition, wood waste is used as fuel for local brick ovens. Unprocessed wood waste (which has an innate low density- and high humidity level) is incinerated in inefficient kilns at low temperatures which results in emission of fine dust. This particular use will be banned due to its environmental impact. The alternative fuel for said brick ovens will be gas. This gas is relatively cheap due to local refineries.

The estimated amount of wood that is available which has a FSC certificate for CoC is estimated to be around the 800.000 ton a year. This volume relates only to the amount of wood waste that is available in the Binh Duong province.

Important stakeholders
The plan of Eneco was to collect 150.000 ton wood a year and convert this into pellets. In this context Eneco wanted to cooperate with IKEA, WNF and SHV. A cooperation would lead to a continuous supply of wood waste, and
Eneco could use the know-how and experience of these parties.

Political and economic environment
In spite of a global economic recession, Vietnam registered quite a high growth in the recent years, with 2008 at 6.18%, 2009 at 5.32%, 2010 at 6.78%, 2011 at 5.89%, and expected 5.7% in 2012. The growth rates acquired in the recent years, made the Vietnamese economy to have the third highest growth rate in the Asia - Pacific Area after China and India.

The structure of the Vietnamese economy, which is basically made up of three sectors: agriculture, industry and construction, and services, has been undergoing a considerable transformation over the last few years. The contribution of the agriculture sector is declining while the industrial and service sectors are increasing their shares.

Since the economic reforms in the late 1980s, Vietnam has transformed into a vibrant economy propelled by strong economic fundamentals, compelling demographics, rich natural resources and a buoyant consumer society. With an economy that is underpinned by exports and domestic consumption, Vietnam’s political and social stability make it one of the safest countries in the world. Its geographic centrality and long coastline provides tourism and trade opportunities. Vietnam’s entrepreneurial culture, young population and rising incomes form a very attractive consumer base, and the country’s high literacy rate and strong, their work-ethic create a highly capable workforce.

Geographical situation
The territory of Vietnam comprises a land mass of 330,000 km², a vast sea area including a large continental shelf, and a string of archipelagos stretching from the Gulf of Tonkin to the Gulf of Thailand.

On the map, Vietnam takes an elongated “S” shape. The national territory is approximately 1,750 km long, ranging from its Northern most point to its Southernmost point, and its width varies from 50 km to 600 km. The total inland border line is 4,230 km in length, including 1,650 km of common border with China in the North, 1,650 km with the Laos People’s Democratic Republic in the West, and 930 km with Cambodia in the West and South West. The sea area in Vietnam is to the east, the South and the South West borders on the territorial water of Cambodia, Indonesia, Malaysia, the Philippine and Thailand. Vietnam possesses a large continental shelf, many coastal and offshore islands and archipelagos.

Vietnam has a rather diversified topography of plains, midlands, and mountains. Mountains and forests with more than 7,000 vegetable breeds make up three fourths of the area of Vietnam and can be divided into four main zones: the North-eastern mountain area, or Viet Bac; the North-western region; the North Truong Son region; and the Central Highlands. The largest and potentially most fertile plains are the Me Kong River Delta in the South and the Red River Delta in North.
Objectives of the project

Description of the aim and objectives of the project; intended results

The main reason to start this project was to collect and pelletize the wood waste and transport these pellets to the Netherlands. By exporting to the Netherlands, wood pellets can be used in proprietary biomass plants to produce green energy. One of Eneco’s major boundary conditions are that these pellets had to be produced in a (auditable) sustainable manner. The intended objectives of the project were:

- Realization of pelletizer plant
- Collection of wood waste (initial goal is 150,000 ton/year)
- Conversion of wood waste to wood pellets
- Importing biomass to the Netherlands
- Consolidation of long term wood waste to green energy production
- To show the practical usability of the NTA8080 on a greenfield project.

Wood pellets
As the importance of finding an alternative to fossil fuels increases, research, new technology and innovation follow. There are many potential sources to be explored and exploited as alternatives. One of these sources starts out as waste, wood waste to be exact. Wood waste can be converted into wood pellets using (certain procedures to prepare the waste before going into) a high pressure press. This high pressure press is known as a pellitizer. Wood pellets have a high energy output and clean emissions, due to its high density and very low humidity level. Eneco worked together with Ingenia on pelletizer design. Eneco also visited and assessed locations on suitability regarding logistics and infrastructure. There were many meetings and negotiations with the board of the industrial zone.

Logistics
Logistics also have proven to be quite a challenge. It appeared to be a substantial part of the cost breakdown. The pellet factory was planned to be built close to the river side, so barges could be used to ship to the seaport in which storage is foreseen and large seagoing vessels can moor. Eneco visited various river ports and continuously kept an eye on logistic developments along the river. There were many meetings and negotiations with different local parties.

Activities undertaken in the project:
Description of the actual project: what activities have been carried out; what was the project boundary; who were the important project partners.

The main activities were carried out to fill in the following themes:

Cooperation
This project could potentially only be successful when Eneco would actively seek cooperation with (local) partners. Companies like IKEA already work for several years in Vietnam and has a lot of experience with local circumstances, cultural differences and sustainability issues. Eneco also started up discussions with NGO GTZ and WWF – Vietnam to bring the value chain to a higher level of transparency also forced by new regulation on the legality of wood timber products.

Waste collection
The aforementioned waste would be collected using trucks and open top containers. The containers would be distributed amongst the wood processing plants and collected when full. As the concentration in the area is high (i.e. travel distances are short) and large containers are used, (40ft) collection trucks require only a minimum amount of trips.
Results of the project: description of the results of the project

If more detailed reports are available as specific project deliverables, this section can refer to these reports and provide a summary.

Initial research shows that certifying the project against NTA 8080 standard is possible. The project can comply with the NTA 8080 because of Annex A (list of exceptions) – less sustainability criteria apply. We had various conversations and field trips with a certifying body in Vietnam and NEN benchmarked existing certifications in furniture industry with the NTA 8080/81. This resulted in interesting insights in analogies and differences between NTA 8080/81 and existing certifications in furniture industry.

Together with NEN, Eneco was investigating the possibilities of certification of the whole supply chain from forest source to furniture factory including the saw dust delivery. An inventory of systems and industry practices including a gap analysis with NTA 8080/8081 was made. Eneco and NEN are mature partners, since they have been cooperating in the experts committee of NTA 8080 for a couple of years already. We have a mutual understanding of each other’s goals and interests which enables a fruitful cooperation and exchange of information and experiences. In Vietnam, certification body Control Union has proven to be a highly knowledgeable subcontractor. They were important for Eneco as an independent sparring partner regarding sustainability, quality and certification.

BSA provided professional assistance on regular basis. The introduction to the different stakeholders at various levels really helped to kick-start the project.

Ingenia has made a basic engineering based on local conditions and circumstances. A clear understanding is retrieved about the technical requirements and challenges of the project. Besides it helped to strengthen the accuracy of the Business Case because clear investment figures have been provided based on quotes of suppliers.

CE Delft provided a calculation of the GHG balance and potential CO2 reduction. Outcome is ~90% reduction potential. Eneco already works with CE Delft for a long period and also in this project high level analysis work has been achieved. The input of the model was provided by Eneco on real distances, volumes and transport modalities.

Furthermore, CEL ASIA has carried out a extensive logistic study resulting in clear overview of needs, demands, challenges and risks throughout the whole supply chain. Currently working with CEL on formalizing partnerships with local logistic service contracts with trucking and barging companies, river- and seaport.

The Vietnamese government was welcoming the project very much. Especially the Industrial Zone (Nam Tan Uyen) provided high level support in obtaining permits, licensing and setting up a local entity in an area with access to good infrastructure (road, waterways, electricity and water).

Suppliers of the raw materials were enthusiastic about the project concept, however struggling a bit with the pace of project development (too slow for them). They really see added value in selling their residuals to a green company, also in order to increase their own environmental awareness and reputation. Some of the suppliers started to think over their own energy use, and possible re-use of their residues.

We investigated the potential of Vietnamese forests and sawmills for future supply for the pelletizer. Native wood from plantations like rubberwood, acacia and eucalyptus might be used. Native wood in general is not certified against any standard yet. FSC certification of native wood is now starting to develop.
What do you think is important to know for project implementers executing similar projects?

Sustainability of the biomass chain has been a leading subject during project development. The range of sustainability awareness among Vietnamese furniture suppliers appeared to be huge. It varies from frontrunner players, whose organization and raw material is certified covering different criteria (quality, labour rights, legality of raw materials, sustainability of raw materials, etc.) to traditional organizations, which don’t have any certification and source their wood from countries with high risk on legality and sustainability. The frontrunner organizations learned us about the highest possible standard that entails in Vietnam and about a realistic approach in order to promote sustainability along the pellet supply chain. As we selected furniture suppliers that supply mainly to US and Europe, they have a basic understanding of sustainability topics. A stepwise approach, self-reporting and sample audits are common in furniture industry for meeting legality and sustainability requirements. Suppliers with high priority on sustainability have dedicated departments with own mandates. During conversations with potential partners, sustainability was always one of the main subjects. We discussed the new sustainability standard and certification scheme NTA 8080 and NTA 8081 for biomass energy and exchanged experiences regarding sustainability criteria and certification.

Overall, the project lay-out introduces a new and innovative solution in Vietnam to deal with wood residues. During the project development we experienced an increasing awareness among our partners regarding the potential of wood residues for sustainable purposes like clean conversion to energy.

One important development which we didn’t foresee when Eneco started up the project is the law on the import of illegal wood into the EU (FLEGT). This had its influence on the NTA8080 which had to be amended to this regulation during the project.

The fact that Vietnam is a transition land for wood products (importing wood and exporting wood products) makes this regulation very relevant but also complex for the project. A study executed by Proferest commissioned contains a risk assessment of non-compliance to this new regulation, which is in force from Spring 2013.

Planning and implementation

Selection of wood waste suppliers is the key in safeguarding sustainability of the wood pellets, produced by the pellet plant. Suppliers’ awareness of topics like sustainability, legality and chain-of-custody is very important. At first, the main selection criterion was FSC certification. In a later stage, we found out FSC certification usually implies only the furniture factory’s organization is certified against the FSC Chain of Custody standard. So, FSC certification does not necessarily imply sustainable (FSC certified) raw materials. In general, our experience in Vietnam is that suppliers with focus on US and Europe end-market are relatively far in their awareness of social and environmental issues and implementation of responsible procurement practices. In the future, end-market focus would be a primary selection criterion for supplier’s right from the start.

Because supply chains of furniture companies are much more complex than expected in first instance, audits for the NTA 8080/81 pilot covering the total supply chain of each furniture company proved to be impossible budget wise. Therefore, audits for the NTA 8080/81 pilot will be based on a risk-based selection of their supply chains instead of the total supply chain of each furniture company. Besides, it is expected that the supply chain from forest to furniture factory will not be certified for the purpose of this project, but only audited to obtain valuable information. NTA 8081 only requires certification starting at furniture factory and hence certification in this project will be implemented accordingly. Selection will be based on the rationale of covering as many continents (where wood is grown in forests and traded) as possible, to improve global reliability of the pilot. Slimming down the number of audits in the pilot and certifications is unrelated with the necessity of responsible purchasing throughout the total supply chain for Eneco. Legality and sustainability of the total supply chain is important for Eneco and a risk assessment methodology for covering legality and sustainability risks from wood residue to forest is developed together with partners like WWF and TFT.

Lessons learned: what did you learn from the project?
Follow up of the project: what are your main follow up activities?

How do you use the project results and lessons learned in your follow up activities? What is needed to ensure duplication of the project; are activities/actions needed by other organizations?

Activities in Vietnam concerning local partners and suppliers have a direct relation and are dependent on a clear view of which parties are going to invest and finance the pelletiser. In 2009 and 2010, the renewable energy market in Netherlands has been subject to policy and subsidy development dynamics. Financial viability of renewable energy from biomass (as byproduct from coal firing as well as main product from a dedicated biomass heat and power plant) is dependent on subsidy levels and duration. In the beginning this has caused delay in investment decisions in biomass energy conversion capacity in Netherlands and hence delay in investment decisions about sourcing for this to be developed capacity. In the end Eneco concluded that it was not economic feasible to import the biomass from Vietnam to the Netherlands.