

A new look at land-grabs in the global South linked to EU biomass policies

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Photo: Suzano eucalyptus plantation in Brazil. *Ivonette Gonçalves de Souza*



Introduction

EU demand for wood for heat and electricity is growing rapidly. While some Member States primarily use domestic wood and wood from nearby European countries, others increasingly rely on long-distance imports of wood, mostly in the form of pellets.

At present, the main exporters of wood for bioenergy to the EU are the southern US, Canada and Russia. However, NGOs, industry forecasts and a European Parliament report all predict that, as Europe's wood bioenergy demand increases, growing imports from the global South can be expected. South America (especially Brazil), Central and West Africa are seen as the most likely future sourcing regions. Serious concerns have been expressed that wood biomass imports from the South could lead to further land-grabs, threatening food security and food sovereignty, communities' access to water, human rights and biodiversity, just as has been happening as a result of EU imports of liquid biofuel feedstock (abbreviated to 'biofuel

feedstock' in this paper).

Mandatory sustainability standards that include social criteria have been proposed by various organisations as a means of preventing such impacts and protecting communities in South America and Africa.

This report examines whether investment trends over the past four years support the presumption that South America and Africa are on the brink of becoming significant new suppliers of wood bioenergy for the EU. Without such investment trends, direct land-grabs as a result of EU biomass policies would seem unlikely in the medium-term. However, as illustrated by the experience with land acquisitions for jatropha, ostensibly for biofuels, land-grabbing can be an indirect as well as direct impact of EU policy choices. This report examines the different potential mechanisms behind land-grabs as an indirect impact of EU biomass policies and the evidence for them. Finally, it discusses the implications of the findings for the debate about biomass

sustainability standards.

The report relies on extensive desktop research, including a complete search of Land Matrix records of land-grabs that could potentially be linked to bioenergy. A limited but nonetheless significant volume of solid biomass, particularly biomass co-fired with coal, consists of agricultural residues such as palm kernel shells or bagasse. Sales of such residues can make agribusinesses such as oil palm or sugar cane plantations more profitable and thus encourage land-grabs for plantation expansion. However, EU imports of non-wood solid biomass and their impacts have not been investigated in this report.

Finally, it is important to note that the report looks entirely at the impacts of EU biomass policies, not at those of other countries looking to import significant amounts of wood biomass, such as South Korea. Indeed, there are sufficient media reports of South Korean investments in biomass-related plantations in South-east Asia to merit a separate detailed investigation.

Most people will associate the term ‘renewable energy’ with wind turbines and solar panels, pictures of which are almost universally used to illustrate this term. Few realise that most of the energy classed as renewable in the EU comes from burning biomass, primarily wood, and that most of the EU’s 20% renewable energy target for 2020 is expected to be met from bioenergy. In 2010, “biomass and waste” accounted for more than two-thirds of renewable energy across the EU¹. Biofuels for transport are included in this figure, but wood remains the main source of bioenergy in the EU and worldwide.

How much wood?

In 2010, most EU Member States submitted their plans on how to achieve their renewable energy targets and those plans showed that overall 54% of all renewable energy by 2020 was expected to come from bioenergy². Although this figure includes biofuels for transport as well as biogas, the large majority of bioenergy is expected to come from burning solid biomass, primarily wood, for heat and electricity. The following chart shows expected expansion in pellet demand according to consultancy firm Pöyry:

Within members states there are vast variations in the use of solid biomass: most countries will use the majority of their solid biomass in heat generation, i.e. Bulgaria stated they would use 95.4% of its solid biomass for this purpose, Lithuania 92.6%, Sweden 89% and the Czech Republic 88%. By comparison, Belgium, the UK and the Netherlands wanted to use 30%, 33% and 61% of solid biomass respectively to produce electricity, although, as discussed below, the Netherlands subsequently scaled back their biomass plans.³

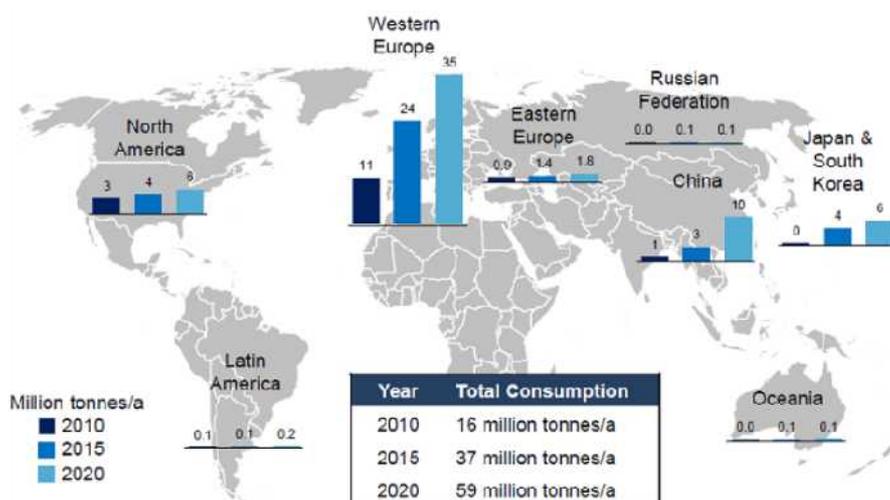
Exactly how much wood the EU will be burning in 2020 is impossible to predict, except that, in the absence of major policy changes, it will be far more than at present. An analysis of member states’ National Renewable Action Plans, published by Fern, showed that to implement those plans the EU would require an additional 80-154 million tonnes of wood by 2020⁴. However, all of the figures cited in Member States’ plans are estimates. Some may be very serious underestimates, others overestimates. For example, Spain cited a high figure for prospective biomass use in their Action Plan but subsequently significantly reduced renewable energy subsidies, including those for

biomass, causing investors to withdraw from this market⁵.

In contrast, the UK current government and industry ambitions for the biomass sector are far more ambitious than those cited in the country’s renewable energy action plan. The Government announced in its 2012 Bioenergy Strategy⁶ that up to 11% of the UK’s total energy could be met from bioenergy (mainly wood) by 2020. They failed to say how much wood and other biomass this would require and estimating such a figure would depend on how efficiently biomass is burned. However, if 11% of the UK’s current total energy demand is met from biomass electricity⁷, this would require around 228 million tonnes of wood⁸ - compared to the UK’s annual total wood production of 10 million tonnes per year. Clearly, this is not a realistic prospect; however existing UK industry plans would already require over 68 million tonnes of wood⁹ - far more than estimated from the UK’s National Renewable Energy Plan. Just how many of these industry plans will be implemented remains to be seen.

Incentives and subsidies for biomass in the EU

The EU’s Renewable Energy Directive mandates 20% overall use of energy classed as renewable by 2020 (as well as for renewable energy in transport which primarily means biofuels), with individual targets set for different member states. It does not mandate any specific target for biomass but it specifically requires member states to show in their National Action Plans how they will “develop existing biomass resources and mobilise new biomass resources for different uses”. There is no such



requirement for other energy sources classed as renewable.

Because all biomass is currently defined as both renewable and “carbon neutral” in EU law, it counts towards the bloc’s overarching target to source 20% of energy from renewable sources by 2020, as laid out in the Renewable Energy Directive (RED)¹⁰. It is therefore eligible for all kinds of national subsidies and inducements set up within member states to encourage the growth of renewable or low-carbon energy. Different member states support biomass heat and electricity through a range of different subsidy measures. Those include feed-in-tariffs, feed-in premiums, Renewable Obligation Certificates, Green Certificates, a Tender System, public loan guarantees, supply-side subsidies for biomass production in the EU and grants for biomass Research and Development. The Netherlands also gives grants to programmes aimed at creating biomass supply chains outside the EU.

There are no mandatory EU standards for biomass sustainability and greenhouse gas emissions, though a small number of member states are developing their own. For a detailed discussion of the problems with biomass standards, please see the joint briefing “Biomass Sustainability Standards – A Credible Tool for Avoiding Negative Impacts from Large-scale Bioenergy?” by Biofuelwatch, Global Forest Coalition and Econexus¹¹.

Biomass and the EU’s 2020–2030 Climate Change and Energy Policy debate

On 22nd January 2014, the European Commission published its proposed “policy framework for climate and energy in the period

from 2020 to 2030”¹². This proposed framework would set only an EU-wide indicative renewable energy target, rather than mandatory renewable energy targets for member states. If adopted, this would remove a key incentive for European governments to subsidise biomass heat and electricity as well as much lower carbon and far more sustainable forms of renewable energy. However, a mandatory 40% greenhouse gas reduction target by 2030 (compared to 1990 levels) is also proposed, and member states may decide to continue subsidising large-scale biomass as a contribution to that target, given that they are allowed to ignore all or most emissions associated with it. A Commission statement on biomass indicates that EU biomass standards will be on the agenda for the 2020–30 period, although given the Commission’s support for new free trade agreements, those are unlikely to translate into genuine regulations that would actually keep biomass supplies from destructive sources out of the EU.

Those proposals will be discussed by the Council of Ministers and the European Parliament. The final outcome is impossible to predict.

Where is the EU importing wood biomass from?

Wood pellets account for most of the emerging global trade in wood biomass. Pellets are significantly less bulky and thus cheaper to transport than woodchips. And coal power stations as well as many types of wood boilers for heating can only burn wood in the form of pellets.

The EU burned around 14 million tonnes of pellets in 2012 – a figure expected to grow to just over 17 million tonnes this year¹³. Since 2008, EU pellet demand has

grown much faster than pellet production. In 2012, 4.481 million tonnes of pellets were imported. Of those 39.3% came from the southern US and 30% from Canada. The rest came mainly from Russia, Ukraine, Croatia and Belarus. North American pellets are mainly going to the UK, Netherlands and Belgium, whereas Denmark and Sweden depend on imports from Russia and the Baltic States. The import figures above do not include trade within the EU (such as the Baltic States). According to industry sources, several EU countries exported a total of 5.4 million tonnes of pellets to other EU countries – more than all non-EU imports. The main net exporters within the EU are Germany, Latvia and Portugal, followed by Romania and Lithuania.¹⁴

There are significant investments in new pellet plant capacity in the southern US and Canada, and EU imports from those regions are forecast to grow steeply. Thus, while EU biofuel policies have increasingly resulted in a South-to-North trade, the global trade to supply the EU with biomass has so far remained almost exclusively a North-to-North trade. The questions are whether this situation is likely to change in the near future and whether, even if it doesn’t, EU biomass policies are indirectly resulting in land-grabbing in the global South.

How likely are future land-grabs in the global South for EU biomass?

As the figures above show, European subsidies and policy support for wood-based bioenergy (biomass) is on track to substantially increase the EU's overall wood consumption. Such a major increase in wood use will inevitably affect global wood markets and prices, regardless of where the wood is sourced from. It must be viewed in the context of ambitious plans for increasing wood-based biomass electricity production elsewhere in the world, especially in North America and East Asia, as well as continuing growth in global paper consumption¹⁵.

The question therefore is not whether EU biomass expansion will impact on countries of the global South but in how far it will do as a result of growing imports from the South or through different, indirect effects.

Predictions of future EU biomass imports from the global South

South America and Africa are widely expected to become significant exporters of biomass to the EU.

According to a 2011 report by the International Energy Agency, based partly on forecasts by industry consultancies Pöyry, Ekman & Co., AEBIOM and New Energy Finance, a future high level of EU biomass demand is expected to result in investments in pellet plants, short rotation crop and tree plantations, such as Eucalyptus, in regions such as Brazil, Uruguay, West Africa and Mozambique¹⁶.

The UK Bioenergy Strategy relies on the majority of wood being imported and assumes future large-scale sourcing from new 'energy plantations'¹⁷. It draws on a consultancy report by the

consultancy firm AEA, which foresees South America becoming a significant source of future UK biomass imports, while other European countries, Russia and North America are expected to continue supplying biomass to the UK, too¹⁸. According to the AEA report, sub-Saharan Africa has a large availability of land suitable for biomass plantations but there is significant uncertainty whether UK biomass imports from Africa will be feasible in the foreseeable future, due, according to the authors, to infrastructure, market and trade barriers.

EU energy companies and industry associations have made optimistic claims about the future potential for biomass sourcing from South America and Africa. For example, Eurelectric, the industry association for electricity providers in Europe, states: "Further potential can be found in regions with significant growth, mainly in Russia, Southern US, South America and Africa."¹⁹

Drax has said in media statements that they are looking to expand their supply chain to South America or Africa²⁰, although they have not announced any specific pellet plant investments or contracts with suppliers in either region. In 2010, MGT Power, a UK biomass company that plans to build two very large biomass power stations in North East England, and already has planning consent for one, entered into a Memorandum of Understanding with a Brazilian company for the supply of eucalyptus pellets. However, as discussed below this is unlikely to be realised.

A 2012 report by the European Parliament's Directorate-General for External Policies²¹ considers that "Africa is likely to play a big role in feeding European demand

for biomass" and that "Brazil is often considered to be the EU's most promising potential source of wood-based fuel in the southern hemisphere".

Various NGO/civil society reports rely on similar assumptions, including reports by the Global Forest Coalition²², World Rainforest Movement and the International Institute for Environment and Development²³.

Predictions of future large-scale EU biomass sourcing from Africa and South America seem logical: Large-scale expansion of tree plantations is underway in both regions, commonly based on land-grabs. As confirmed by the Land Matrix database, a significant number of land-acquisitions in recent years have been for 'forestry', defined as covering both logging concessions in forests and tree plantations. According to data from the Food and Agriculture Organisation (FAO), the extent of tree plantations²⁴ grew by 48% worldwide between 1990 and 2010 including by 67% in South America and 32% in Africa.²⁵ The Brazilian government announced in 2011 that their new policy was "to more than double the tree plantation area in Brazil to 15 million hectares, increasing Brazil's market share from US\$ 7 billion to US\$ 25 billion", reported by the Coordinator of the World Rainforest Movement²⁶.

Trees have the highest growth rates and can be grown on the shortest rotations in the tropics, one of the key reasons why the global pulp and paper industry has been increasingly moving from the global North to the South²⁷.

One of the questions discussed below is whether actual investments and industry developments confirm these

predictions. Does North America's pellet industry simply have a few years' head start while the infrastructure for woodchip and pellet production for EU biomass markets is being put in place in Africa and South America? Or are global biomass markets developing in quite a different way from that which has been predicted? And what are the implications for future land-grabs?

Different ways in which EU bioenergy policies can cause land-grabs in the global South

The term land-grabbing has been defined in different ways. The definition used in this report is adopted from the Transnational Institute: "*Land grabbing is essentially control grabbing. It refers to the capturing of power to control land and other associated resources like water, minerals or forests, in order to control the benefits of its use.*"²⁸

As the Transnational Institute cites from an article by J.F. McCarthy et al, this can include 'virtual land grabs' where "*behind a façade of land acquisition for a stated purpose, there lies an agenda to appropriate subsidies, obtain*

bank loans using land permits as collateral, or to speculate on future increases in land values."²⁹

It would therefore include not just direct land-acquisitions by companies, foreign governments, etc., through purchases or long-term leases, but also contract farming agreements. Here, small farmers legally retain land rights but become obliged to grow certain crops or trees on all or part of the land, and are dependent on a company for selling the produce/wood and often also for the purchase of inputs such as seeds or agro-chemicals.

There is no doubt that EU demand for biofuels has led to large-scale land-grabs in the global South, although precise estimates vary. According to ActionAid, 98 European investors had acquired 6 million hectares of land in sub-Saharan Africa for biofuel production for the EU by May 2013.³⁰ The EU does not publish comprehensive statistics to show where different biofuel feedstocks are imported from. However, a report produced for the European Commission in 2013 (using 2010 data) confirms that a significant

proportion of biofuel feedstock is being imported from the global South, albeit more from Latin America and South-East Asia than from Africa³¹. Palm oil imports in particular have significantly increased since then³².

It is clear that the area of land in the global South grabbed ostensibly for EU biofuel production far exceeds the area of land in Southern countries used to produce feedstock actually imported for biofuels to the EU. Most biofuel feedstocks are vegetable oils, sugar or starchy crops which have many different uses and suppliers will commonly sell to whichever market commands the highest price at any one time. EU biofuel demand drives up global agricultural commodity prices, especially for vegetable oil³³. These price signals – and the anticipation of future higher prices and demand growth – motivate greater investments in plantations such as palm oil and thus cause larger-scale land-grabbing.

Jatropha biofuels: an example of speculative land-grabs

Over the past decade, large areas of land in countries including India, Mozambique, Swaziland and Mexico, have been converted to jatropha plantations for biofuel production. While some companies have entered into contracts obliging small farmers to grow and sell jatropha to them, others have acquired large areas of land for plantations, and some companies have done both. Case studies of highly damaging land-grabs for jatropha have been published by ActionAid, Friends of the Earth and other NGOs. Yet no jatropha biofuels have ever been produced on a commercial scale, despite promises of high yields and of jatropha thriving even on poor soils with little water. Early investors may have genuinely believed that they could produce significant quantities of biofuels from jatropha, even if other claims were clearly hyped. Yet by 2009 at the latest it must have been apparent to any serious investor that there was

no credible business case for jatropha biofuels. That year, the World Agroforestry Institute published its report, 'Jatropha Reality Check', based on a field assessment of jatropha in Kenya. This concluded that growing jatropha either through intercropping by smallholders or on monoculture plantations was not economically viable. Nonetheless, the EU biofuel demand and especially the prospect of a future market in aviation biofuels continues to be cited by companies as the reasons to invest in jatropha plantations. There is a strong case for arguing that the purpose behind more recent jatropha investments has been primarily land speculation. Jatropha thus offers a clear example of a state-supported European market allowing companies to leverage investment and obtain government consent for what in fact are speculative investments.

A significant proportion of reported biofuel land-grabs, particularly in sub-Saharan Africa, have been for jatropha. Jatropha oil is not edible and although it can be used to make soap, there has been no reported interest in trading jatropha for purposes other than biofuels. Nonetheless, the experience with jatropha illustrates why the relationship between EU biofuel demand, subsidies, and land-grabs is far less straightforward than it seems.

The experience with EU biofuel policies therefore reveals a range of mechanisms by which the creation of a new demand, artificially created and maintained through direct and indirect public subsidies, triggers land-grabbing in the global South. Each of these mechanisms could also potentially apply to EU biomass policies. There are at least four drivers for land acquisition:

1) Biofuel Feedstock: The clearest direct impacts are land-grabs which actually result in biofuel feedstock being produced and exported to the EU. Whether this is likely to happen with biomass in the near future will be discussed below.

2) Indirect Land Use Change (ILUC): Extensive literature on ILUC from biofuels illustrates that converting land to biofuels or turning grains, vegetable oils or sugar previously grown for other purposes into biofuels instead can displace food production and other agricultural activities into different regions. Similarly, if agricultural land was converted to tree plantations in one region, this could push up food prices and therefore lead to ecosystem conversions and land-grabbing elsewhere. And if wood currently used for other markets was diverted to bioenergy, this could trigger new tree plantation expansion in the South. Global

price signals are the main mechanism for ILUC. So far, tree plantation expansion in the sourcing regions for EU pellets, especially in the southern US, is primarily happening at the expense of forests. There is no evidence as yet that significant areas of agricultural land are converted for biomass purposes in Europe, North America or Russia. However, there are two obvious displacement scenarios resulting from EU biomass demand:

a) *Pulp and paper:* The southern US is the largest pellet exporter to the EU (and worldwide). It is also the largest paper producing region in the world. The US Government's "Southern Forest Futures Report" acknowledges that a high demand for biomass from the region would adversely impact the pulp and paper industry by diverting much of the wood currently used to produce paper.³⁴ Given that global demand for paper continues to rise, declining production in the southern US would likely lead to greater production – and therefore more tree plantations – in countries of the global South. Similar effects could result from diverting wood used for paper production elsewhere, including in Europe, to bioenergy.

b) *Wood panel production:* In Europe, representatives of the panel board industry have warned that bioenergy is increasingly diverting residues and waste wood upon which their industry relies and that some of their members have already gone out of business as biomass prices escalate.³⁵ This trend could soon turn the EU into a net importer of panel board, which would further impact on global wood demand and prices.

3) Speculative investments: As shown by the example of jatropha, speculative investors are citing EU biofuel demand in order to attract investment into land acquisitions

even if they have no realistic prospect and perhaps no actual intention of producing biofuel feedstock. They may be primarily motivated by land speculation and use the promise and hype about EU biofuel demand to legitimise and attract investments in land. It is widely acknowledged, including by the World Bank, that land grabs are often undertaken primarily for speculative purposes³⁶. EU biomass mandatory targets and subsidies could equally be cited for such speculative purposes, too.

4) EU climate and environmental policies: Such policies are often seen and cited as examples to follow by policymakers and corporate interests in other countries. Although this indirect effect is particularly difficult to quantify, EU biofuel policies have coincided with blending mandates and other biofuel support measures in developing countries. A similar 'copycat' effect could be happening with biomass³⁷.

Investments in tree plantations and biomass-related infrastructure in the global South that could be linked to EU demand

This chapter explores the actual evidence for investments in Southern countries where there is information or data confirming a direct link to EU biomass demand. These include:

- 1) Cases in which European energy companies have confirmed the sourcing of biomass from Southern countries,
- 2) Investments in or publicly announced plans for pellet and woodchip plants and/or related supply chain infrastructure with the intention of supplying European markets,
- 3) Announced investments in tree plantations where companies have indicated an intention to supply EU biomass markets,
- 4) Partnerships between companies owning tree plantations and companies seeking to set up supply chains of biomass to the EU.

It should be noted that investments falling into category 3) may be only loosely linked to EU biomass markets. Some of those may be speculative investments, with promises of future EU biomass demand cited to attract investment. And some plantation companies will simply mention a wide range of potential markets for the wood from new plantations. They will not commit themselves to supplying any one particular market but may well be prepared to sell wood to pellet plants if they were built and if pellet prices made such sales lucrative.

Three countries have been chosen for detailed case studies: South Africa, Ghana and Brazil. South Africa is the only African country where export-oriented pellet plants were built in recent years. Ghana

has attracted more investments that appear linked to EU biomass demand than any other African country. And Brazil has a larger area of tree plantations for bioenergy than the rest of the world put together³⁸.

Wood pellet exports from South Africa?

South Africa has around 1.5 million hectares of non-native 'formal' tree plantations, mostly of eucalyptus, pine and acacia as well as a further estimated 1.7 million hectares of land colonised with high densities of these invasive alien tree species³⁹. Most plantation wood is for pulp and paper, especially for export and some is used for domestic construction timber and furniture. Amongst the documented impacts of the plantations are the displacement of communities, the destruction of biodiverse grasslands, freshwater depletion and pollution and soil contamination, compaction and erosion⁴⁰. Government support for the plantation industry - the location of the country's main deep water port being close to tree plantation areas, and capital support for pellet plants - have made South Africa a likely candidate for pioneering an African pellet industry. At least three, possibly four pellet mills were opened in recent years and limited quantities of South African pellets have been burned in UK, Dutch and Danish power stations.

Yet the fate of the three or four pellet plants shows that South Africa has ultimately been unsuccessful in establishing pellet supply chains for Europe, at least for the time being. For one of the plants ("Star Biomass Pellets" at Richards Bay) no corroboration can be found through web

searches that it ever opened but the company behind it ceased operating in 2005. However, three pellet plants with a combined capacity of 240,000 tonnes a year were in operation in recent years. One of those, located in Howick in Kwazulu Natal, belonged to a South African company called Biotech Fuels. The company filed for bankruptcy in March 2013 after their main investor, GAM UK, called in their finance because the plant was not breaking even. The other two, located in Port Elizabeth ("ECB Biomass") and Sabie ("Zebra Pellets") had been at least partly financed by the German Frigate Consortium, as part of a military offset (not carbon offset) scheme called the National Industrial Participation Programme. Under that scheme, European military corporations from which South Africa purchased helicopters, submarines and fighters had to 'offset' some of their profits by investing into industrial developments in the country. ECB Biomass was built by the Dutch energy company GF Energy⁴¹, Zebra Pellets by a South African company and both were sold to the Industrial Development Corporation (IDC). The IDC is a national development finance institution owned by the South African government and subsidised from tax-payers' money. All three plants appear to have relied on forestry residues from existing plantations and pellets were exported to the Netherlands, Denmark and the UK. One of these two plants ceased operating in 2012; the other was formally closed in January 2013.

A report by IIED, One World and REEEP (Renewable Energy and Energy Efficiency Partnership) examines the reasons why one of the three plants (at Howick) failed: Road haulage, cleaning and drying

costs (including grid electricity costs) as well as maintenance costs (due to high wear and tear rates) were so high as to make the plant uneconomic, even though the pellets were produced from residues which the company obtained free of charge. The losses were compounded by an absence of domestic purchasers of the pellets, and export prices fell during the recession. Though not discussed in that report, falling export prices may have reflected fluctuations in the Euro-Rand exchange rate. The same factors are also likely to have affected the other two failed pellet plants.

This experience shows that at the present time, an export-focused pellet industry is not economically viable in South Africa, even though government policies (military offsets and IDC take-overs) assured high levels of initial capital finance, and even though free wood supplies had been guaranteed from existing plantations. If exchange rate fluctuations, electricity and transport costs and a lack of technical expertise (leading to high maintenance costs) make pellet production unviable, even under the favourable conditions in South Africa, it is hard to see export-oriented pellet industries developing in African countries with less favourable conditions. Major investments by European or North American companies, experienced in running pellet plants and eager to build up African supply chains despite high initial costs could change this situation. But no evidence has been published that indicates any concrete investment proposals.

Biomass land grabs in Ghana?

Ghana has been heavily targeted for land-grabs by foreign companies, many of them European. According to the Land Matrix, foreign companies have

obtained contracts for up to 1.18 million hectares of land⁴². The majority of these land-grabs are for agriculture, including palm oil and many of these are for biofuels. However, the Ghanaian government strongly supports the large-scale tree plantations including through its National Forest Plantation Development Programme. According to the Forestry Commission of Ghana, which acts as the lead agency, 166,499 hectares of tree plantations had been established by the end of 2011, under six different programmes⁴³. Not all of these are industrial tree plantations: 80,728 hectares were planted under the Modified Taungya System programme, under which farmers are encouraged to inter-plant trees with food crops and a further 13,388 hectares attributable to the Community Forest Management Programme. However, other programmes support large commercial tree plantations and in 2011 alone, 49 “private entities” signed lease contracts with the Forestry Commission. Fourteen companies were allocated at least 1,000 hectares of land for tree plantations.

According to the Forestry Commission’s trade statistics⁴⁴ for 2012 and 2013, pellets or woodchips do not feature amongst Ghana’s wood exports. This is not entirely correct because, as shown below, at least one company has been exporting woodchips for biomass to the EU. However, the quantities are likely too small to feature in trade statistics.

Since 2010, at least 6 companies have announced an interest in producing and exporting woodchips and possibly pellets for biomass electricity from plantations in Ghana. This far exceeds the number of similar announcements in any other African country.

One company – the UK-based **Africa Renewables Ltd (or AfriRen)** – has started supplying woodchips from Ghana to at least one power station, in Denmark. In May 2011, AfriRen’s subsidiary Takoradi Renewable Energy Ltd⁴⁵ entered into an 8-year contract with SIFCA,⁴⁶ a subsidiary of Ghana Rubber Estates Ltd (GREL). Under this agreement, AfriRen will log and chip older rubber trees on GREL’s existing 13,000 hectares of plantations. These trees, too old to produce high yields of sap, are being replaced with new rubber trees by GRE. AfriRen provides chipping facilities for 120,000 tonnes of wood a year, all of which is for export to Europe. In October 2011, AfriRen signed a supply contract for 750,000 tonnes of woodchips over five years with the Dutch energy company Verdo Group. Under this contract 140,000 tonnes of AfriRen woodchips are currently going to a Danish power station, via the Ghanaian Port of Takoradi. Those woodchips are being delivered to the Port of Aarhus and burned at Verdo’s Grenaa CHP plant in Randers. This is a 52MWe combined heat and power plant that has been converted from coal to biomass burning⁴⁷. Verdo Group plans to become a large European player in the bioenergy market. AfriRen’s project was facilitated through credit from the Standard Chartered Bank and in January 2012, the company announced plans to replicate the project across West Africa. However, no further contracts or investment deals involving AfriRen or their subsidiary have been reported so far. ***Indeed, this is the only existing project in which biomass from Africa is being supplied for European energy generation⁴⁸ for which corroborative data could be found.***

AfriRen’s project description

resembles a previous biomass project in Liberia, where the Swedish government-owned energy corporation Vattenfall had acquired shares in Buchanan Renewable Energy (BRE) in order to obtain woodchips made from old rubber trees at a plantation. This project had been strongly criticised by civil society groups because of its adverse impacts on small farmers and on communities depending on charcoal production and use of rubber wood, and because of legal irregularities. Vattenfall subsequently disinvested from BRE and announced that they would source wood from North America rather than Liberia, citing economic reasons. The Liberian experience showed that even biomass-export projects that do not require new or expanded tree plantations can have highly negative social impacts. There are no independent reports about AfriRen's project; hence it is impossible to make any conclusions about its impacts. However, in 2012, protests by GREL's workers against poor salaries, discrimination and breaches of Ghana's Labour Act were reported⁴⁹.

Of the other five biomass-export-related ventures, at least one and possibly three have failed. UK company **Clenergen Corporation** had announced in 2010 that they had obtained a 45-year sublease for 4,800 hectares of land in Ghana in order to produce 100,000 tonnes of woodchips from 'energy crops' by 2014. Clenergen also stated that they had acquired a lease for around 2,000 hectares for a similar venture in Guyana and that they intended to export woodchips for the UK and US. Clenergen Corporation and its sister company are now dissolved and an Indian subsidiary they had set up is in liquidation. Their supposed land-acquisition and its subsequent fate cannot be corroborated through desktop

research.

An Indian company, **Abellon CleanEnergy Ltd**, announced in February 2010 that it would convert 10,000 hectares of so-called "degraded land" to plantations for biofuel and solid biomass plantations. Pellets were to be produced from bamboo and to be exported to the US and Europe, with long-term plans to build a biomass plant in Ghana and to then use the pellets domestically. Since then, Abellon has purchased a large 130,000 tonne/year pellet plant, but in Canada, rather than in Ghana. The company has made no recent public announcement about converting land to biomass plantations. They have spoken of plans to build a "solid biofuel plant", possibly a pellet mill, in Sokoban, Kumasi, Ashanti Region, with a 100,000 tonnes/year capacity, and possibly another one half that size in Ashanti or Western region. The plant in Sokoban would use sawdust from existing wood industries, although it would appear to require significantly more sawdust than is available in the town⁵⁰. However, there are no indications that the money required for such a pellet plant has so far been invested, or that construction is imminent. And while Abellon referred to such plans at an event in February 2014⁵¹, their website still only speaks in general terms about 'planned investment projects' in Ghana.

The Danish company **Scanstyle Biofuels** announced joint plans with Scanstyle Ghana Ltd to produce wood pellets from sawmill residues in Mim. They also referred to timber from trees which they said they had planted at their 40,000 hectare concession. The pellet investment (actual or proposed) was reported to be worth around \$5.14 million. Although Scanstyle Biofuels stated

that they would target domestic markets, their investors, the founders of African Investments A/S, announced in the same year that the 50,000 tonne per year proposed pellet plant in Mim would be sold to Dong Energy to supply Danish power stations, and that the plant would be built in partnership with the Ghanaian company PHC Ltd. Since then, however, no announcements have been made to suggest that these pellet plans were ever progressed.

Another venture that was to involve pellets from agricultural residues rather than wood pellets for export (not included in the project figures above) involved a UK firm called **Ghana Biomass**. They had announced plans to produce 350,000 tonnes of cocoa husk pellets for the UK market. However, their latest submitted Company House records, from December 2013, are classed as 'dormant accounts'. Ghana Biomass has not so far undertaken any economic activities, i.e. they had not traded, nor taken up loans or acquired assets. On their website, they claim to have "*already raised more than half of the required funding*" but there is no published evidence that their plans have been progressed.

There are two companies which have acquired land for tree plantations in Ghana and have referred to the potential of biomass exports. One of those is a UK company, **Mere Plantations Ltd**, whose "sister companies" are called Mere Environmental Ltd, Mere Power Ltd, Mere Power (Ghana) Ltd and Blue Energy Ghana LL⁵². From their website, the company is currently planting 5,000 hectares of teak plantations in Ghana's Ashanti region and has secured a further 25,000 hectares. The Forestry Commission Ghana's last two Annual Reports contain references to and photos of Mere's teak plantations, although no

independent information can be found to corroborate the hectare figures. In April 2013, the company announced plans to build a centre for the import and processing of woodchips from West Africa (i.e. Mere's teak plantations in Ghana) at Holyhead Port in Wales. There is no record of any relevant planning application and Mere's website does not mention any specific markets for their wood. It is therefore impossible to predict who will end up purchasing this teak. However, teak is a valuable tropical hardwood, in high demand for furniture and other sawn wood uses, and it cannot be grown on such short rotations comparable to eucalyptus or bamboo. For teak, 20-30 year rotations are classed as 'short'. This would make it a surprising choice for bioenergy-generation (except as a use for sawmill residues). And given that Mere has only just started establishing the plantations, their announcement of imminent plans for teak-biomass imports to Wales does not sound credible.

Finally, **Miro Forestry Company**, registered on the Cayman Islands, advised their investors, GZ Invest, that they had signed a cooperation agreement with ABREC (African Biofuels and Renewable Energy Company)⁵³ to develop a woodchip biomass business with an initial focus on Ghana which would supply West African as well as export markets with an initial 100,000 tonnes per year.

According to the company's information, Miro signed two 50-year leases for 5,000 hectares in the Ashanti Region in April 2009 and have begun planting teak, eucalyptus and Spanish cedars on what they call their Boumfoum Plantations. Their website does not make it clear whether the leases were for 5,000 hectares each, i.e. 10,000 hectares in total, or for 5,000 hectares in total.

Miro Forestry Company obtained initial credit from GZ Invest in Germany. They had planted 250 hectares by early 2012 and no figures for subsequent plantings can be found.

However, Miro Forestry's current website states that the tree species grown on the Boumfoum Plantations are teak and Spanish cedar and describes them as 'high quality timber' and 'excellent for plywood and veneer' respectively, rather than as potential biomass sources. It does not mention any agreement with ABREC, although the company still mentions biomass as a possible market for wood from their Sierra Leone plantations. ABREC's website makes no mention of any related biomass plans either.

One other company that deserves a mention in this chapter is called **African Plantations for Sustainable Development (APSD)**, even they speak about plans for biomass energy production in Ghana rather than woodchip or pellet export. This is a secretive company which is said to have acquired 450,000 hectares of land for tree plantations in Ghana's Brong Ahafo Region and possibly in the Ashanti Region. If the size is confirmed, this would make it the second biggest land-grab in Ghana. According to Land Matrix, who list the status of the project as 'unconfirmed', APSD is a South African company, whereas a Ghanaian reporter has described them as a "*phony Swedish company*". A concerned local association commissioned Databank Financial Services (Ghana) Ltd, in 2009, to ascertain more information about this company – but their investigation yielded no results.

APSD is in fact registered in Norway and three founder names can be found, including Erling

Lorentzen. Lorentzen, now very elderly, founded one of South America's largest and most controversial⁵⁴ pulp and paper companies, Aracruz Celulose⁵⁵, in 1967. APSD has stated that they intend to produce 1.5 million tonnes of pulp a year and to also generate 600 MW of electricity from eucalyptus plantations, for which an estimated 6 million green tonnes of wood would be required. As confirmed by the Forestry Commission, APSD started planting eucalyptus in 2012, but their power generation plans appear not to have been progressed so far.

Indeed, 600 MW of biomass electricity generation would be a hugely ambitious plan, unprecedented in Africa. By comparison, the UK's installed capacity for biomass electricity from purpose-built plants is only around 425 MW, actual generation in those plants is significantly lower and not all of this comes from burning wood⁵⁶. Furthermore, none of the three known founding directors appears to have any background in the energy industry and the technical expertise and the capital investment required for building biomass power stations is high (an estimated £300 million for constructing a 100 MW biomass plant in the UK⁵⁷). It is therefore highly questionable whether domestic bioenergy generation is the true purpose of the plantations.

In 2012, Kumawu residents concerned about the acquisition of 37,231 hectares Kumawu stool land by APSD and another plantation company (Afram Plantation Ltd) petitioned the High Court's Land Division to declare the transaction illegal, to impose damages, a restraining order and to confirm the traditional boundary and land ownership. They warned that the land

transaction was harming farmers and fishermen and causing the collapse of the traditional Kumawu stool lands⁵⁸. No judgement of this case can be found and it is not clear whether it is still pending⁵⁹.

In April 2014, a Ghanaian news service reported that around 2,000 farmers and other residents were being displaced in Atebubu Amantin district, Brong Ahafo, as a result of the sale and lease of 9,000 hectares of land to APSD and other investors. The local MP was cited as warning that the region's food production and food security were at risk⁶⁰.

In summary, while several plantation investments and proposals have been justified, at least partly by the demand for biomass, often for export, there are no convincing plans either for producing pellets or for exporting woodchips for biomass from new plantations. The only existing project involves wood from existing rubber plantations.

Eucalyptus plantations for energy in Brazil

Brazil is widely seen as a world leader in "tree plantation technology"⁶¹. 7.1 million hectares were covered by industrial tree plantations in 2010 – which is nearly the size of Scotland. Companies and the government alike are envisioning further large-scale plantation expansion. As reported above, in 2011, a government policy to more than double the area of tree plantations to 15 million hectares was announced⁶². According to the Brazilian pulp and paper industry association BRACELPA, Brazil achieves the highest yields from tree plantations anywhere in the world – 44 m³ per hectare per year for eucalyptus, which the industry states could in future be increased to 70 m³/ha/year. There is a strong push for the development and

commercialisation of genetically engineered (GE) trees in Brazil, with Futura Gen, a subsidiary of the pulp and paper company Suzano Papel e Celulose, having had approval for four field trials with GE trees so far⁶³. A bill to permit commercial plantings of GE 'terminator' seeds was to have been considered by Congress in February 2014 although the debate and vote have been delayed. This would breach a global moratorium agreed by parties to the Convention on Biological Diversity and it is widely seen as motivated in part by plans for GE eucalyptus commercialisation, although agribusiness companies may be interested in crop-related applications, too⁶⁴.

According to industry estimates, eucalyptus accounts for around 5 million hectares of tree plantations, with all or most of the remainder being pine.⁶⁵ Although most tree plantations are for pulp and paper production, nearly half of all eucalyptus is used for 'industrial fuelwood', including charcoal⁶⁶. Charcoal is used primarily for pig iron and steel production and around 1 million hectares of plantations are directly owned by steel companies. As a result, Brazil has more tree plantations dedicated to energy production than the rest of the world put together.

In response to the demand for industrial charcoal, plantation companies have been developing plantations with eucalyptus clones, bred specifically with a high lignin content⁶⁷ for this purpose⁶⁸. A high lignin content means that more energy will be generated from combustion per tonne of wood. On the other hand, pulp and paper companies prefer wood with low lignin content. This means that different eucalyptus plantations in Brazil are established either for energy or for paper production. Furthermore,

plantation companies in Brazil are also developing high-density, fast-rotation eucalyptus plantations for energy use. Experiments with such plantations started in the early 1980s but initially failed. In recent years, however, at least nine companies have set up experimental or pilot plantations of this type⁶⁹.

Given that Brazil already has the highest-yielding eucalyptus plantations in the world and the most experience with optimising tree plantations for energy production, the emergence of an export-oriented wood pellet industry would seem far more likely in Brazil than in Africa. Nonetheless, even in Brazil, wood pellet investments that had been announced, have also been cancelled or have simply not materialised to date. According to an analysis by a large Canadian investment bank, CIBC,⁷⁰ pellet production in Brazil could not currently compete with that in Canada or in the southern US. This is largely due to Brazilian energy prices and transport fuel costs being higher than those in North America (with pellet production being very energy-intensive). Furthermore, land prices have been rising in Brazil, pushing up the price of wood. Rising land prices have been linked to foreign investment in Brazilian land for monocultures⁷¹.

According to industry figures, Brazil had 10 pellet plants producing a total of around 320,000 tonnes a year, but only for supply to domestic markets⁷².

One company that published plans for export-oriented pellet production is the Brazilian energy firm **ERB (Energias Renovaveis do Brasil Ltda)**. In October 2011, ERB announced plans to build a demonstration plant that produces torrefied pellets for export to Europe. Torrefied pellets are

high-density pellets which can be burned in boilers built for coal combustion. Worldwide, torrefication has so far only been successful on a small rather than commercial scale, due to technical challenges. ERB stated that the first torrefied pellets would be produced in 2012 and that they might build a larger plant for such purposes in 2013. At the same time, they announced plans to build a biomass combined heat and power plant that would provide energy to a Dow Chemical factory in Aratu, in the state of Bahia.

Since then, ERB and Dow Chemical have opened the biomass cogeneration plant in Aratu, which is burning eucalyptus woodchips from 10,000 hectares of new plantations owned by ERB, as well as sourced from the northern coast of Bahia. The plant and plantations were facilitated by the Brazilian National Development Bank (BNDES) with a US\$105 million loan.

Yet ERB's independent pellet plans have not been progressed.

In July 2013, ERB stated that they had started eucalyptus trial plantations in Alagoas and that they had long-term plans for 12,000 hectares of plantations in that state in order to produce electricity for sugar mills, and to supply a proposed pellet mill which might supply European markets. ERB thus appears to keep open the option of future pellet production for export, but they have not invested or attracted investments in this sector.

Joint proposals for an export-focused pellet mill by the Brazilian company TANAC and the Dutch energy firm Eneco were announced in March 2011, but abandoned in August 2012. TANAC owns at least 30,000 hectares of eucalyptus plantations

in Rio Grande do Sul, and they have been exporting woodchips from Rio Grande Port since 1995. Their website states that they are diversifying into exporting woodchips "*to energy and woodchip board producing markets*", but no information about any bioenergy-related sales has been published.

One Canadian company, **Timber Creek Farms Industrial**, claims to have built a 100,000 tonnes a year pellet plant in Piên in the state of Paraná to supply European coal power stations with pellets made from pine plantations. However, their claims appear very questionable: Their supposed Brazilian partner company, Arbeit S.A., makes no mention of such a plant on their website and, although the local government had reported in May 2011 that construction of such a plant had commenced, no confirmation of this commission has been published. Timber Creek later said that they had transported an existing pellet plant from Canada rather than building a new one. It is difficult to imagine an entire large pellet plant being shipped long-distance and then being transported some 100km over land.

An industry website⁷³ recently announced plans for a new pellet plant by **Brazil Biomass and Renewable Energy**, who say it will be built in Santa Catarina state with a (relatively small) 36,000 tonne annual capacity, which may increase in future. It will use sawmill residues and pellets are to be exported to Italy. According to Brazil Biomass, the plant is fully financed by the Brazilian National Development Bank and a development bank in Santa Catarina (BRDE). Whether such a pellet plant will indeed be opened remains to be seen. Curiously, the company's website mentions no such plans and describes Brazil

Biomass and Renewable Energy as a consultancy firm in the bioenergy field.

A large Brazilian corporation which has announced export-oriented pellet plans is the **Colleman Group**, which owns around 50 companies. Colleman Group already has 2,700 hectares of eucalyptus plantations in the state of Santa Catarina. Colleman said in March 2012 that they would invest \$16.6 million in the production of 1 million tonnes of pellets, woodchips and briquettes in the state, as well as in a further 3,000 to 4,000 hectares of plantations. Pellets were intended to be shipped to Europe and Asia. The company's most recent press statement about those plans was in September 2013 and it showed that they were still only 'investigating' the feasibility of pellet production for export and that no actual investment had been made in it.

The biggest pellet plans of all were announced by **Suzano Papel e Celulose**. They stated in July 2010 that they would invest around \$800 million in three pellet plants in the Northeast of Brazil, each of them producing 1 million tonnes per year. The plants would be operational in 2013 or '14. Three months later, Suzano entered into a Memorandum of Understanding with UK biomass company MGT Power, who had obtained planning consent for a 299 MW biomass power station at Teesside Port (which has not so far been built). Their next announcement, in September 2011, showed that they had dropped one of their pellet plant plans. At that time, they were still planning to build two plants with a total capacity of 2 million tonnes per year, one in Maranhão, the other in Piauí, with the proposed investment now reduced to around \$534 million, which included plans for new plantations. In March 2013,

Suzano officially suspended both of their remaining pellet mill plans, until such time as their debt had fallen considerably, and announced that they would instead focus on building a new pulp mill in Maranhão. This, they announced, opened at the end of December 2013. Suzano is Brazil's most indebted pulp and paper company and they are in financial crisis. In Maranhão, they have been legally prohibited from operating since 2012, following a court ruling which deemed their environmental license for eucalyptus plantations and for their planned pulp mill, as unlawful – although this has not stopped them from operating illegally. In Piauí, a court revoked their license for a pulp mill project in 2013. Furthermore, the company has faced major civil society protests in both Maranhão and Bahia.⁷⁴

Suzano's Memorandum of Understanding with MGT Power in 2010, and their expectation of a European wood pellet market at the time, undoubtedly lent impetus to their investment in tree plantations in the state's Baixo Parnaíba region, where they received permission to clearcut 40,000 hectares of Cerrado forest in 2009. To date 30,000 to 40,000 hectares of eucalyptus has been planted. Some of the plantations are intended for pulp and paper production but others are high density, short-rotation plantations, which would only be suitable for energy generation (including wood pellet production). In 2013, an investigation by researchers from the World Rainforest Movement and CEPEDS (Centre for Study and Research for the Development of the Southern Bahia Region) looked at the impacts of Suzano's plantations in Baixo Parnaíba region on communities and ecosystems. They showed that Suzano had clearcut Cerrado savannah forests with bulldozers

for their plantations, destroying the basis for the livelihood of traditional communities. Those communities have been living in harmony with the Cerrado ecosystem, one of the most biodiverse savannah ecosystems on the planet. Their livelihood depends on small-scale food growing and cattle rearing and on harvesting fruits from native trees, such as Bacuri and Pequi (nut) trees. Several communities have been deprived of their access to their land for cultivating food and grazing cattle and have seen thousands of the Bacuri and other trees which previously offered a harvest, cut down by Suzano. Other communities have in some cases resisted Suzano's efforts, by standing in front of bulldozers. Where tree plantations have been developed, river headwaters have dried up and the water volume of nearby streams has shrunk. Dense, short-rotation and high-yield eucalyptus plantations planted for biomass energy require even more water than the wider spaced, longer rotation pulp and paper plantations. Experiences in Baixo Parnaíba region illustrate how Suzano's expectations of a new pellet market in Europe has led to highly damaging land-grabs and deforestation, even without actual investment in any pellet mill or, for that matter, in the MGT biomass power station that had intended to purchase the pellets. In other words, this damage has been primarily based on speculative demand.

While the prospects of Brazil becoming a significant pellet exporter to Europe in the near future have receded, interest in new 'energy' tree plantations clearly has not. With a large domestic demand for 'industrial fuelwood', including charcoal, as well as a new interest in domestic electricity generation from wood, this situation is unlikely to change.

In August 2013, at the Brazilian Government's A5 energy auction, long-term energy supply contracts were awarded to two proposed wood power stations, with a joint capacity of 300 MW (for which around 3 million green tonnes of wood are required). Both of these power station plans are associated with proposed new eucalyptus plantations. Previously, biomass electricity in Brazil had almost exclusively been produced from the sugar cane residue, bagasse.

In summary, Brazil certainly has the technical capacity, experience and access to investment capital required for large-scale pellet production, as well as the highest per hectare yields from any tree plantations in the world. However, relatively high domestic energy costs, together with uncertainties over global pellet prices (including over future currency exchange rates) would prevent pellet producers from competing with those in Canada and the US for access to the EU. Burning wood in domestic industries and power stations in Brazil appears to make more economic sense. The impacts in terms of deforestation and land-grabbing are the same as they would have been for export-oriented pellets.

No emerging large-scale wood-biomass exports from other countries of the global South to Europe

Analysis of biomass-related developments in South Africa, Ghana and Brazil suggest that it is unlikely that a significant wood-biomass supply chain from any country of the global South to Europe will be developed in the foreseeable future. There is no evidence from other countries to contradict this conclusion.

In 2009, the Canadian mining and forestry company **MagIndustries**, had announced the first shipments

of woodchips from the **Republic of Congo** to Europe and stated: *“Future operating results are expected to improve based on the strengthening world economy and the expected demand from the biomass energy sector.”*

MagIndustries had acquired a 54 year lease for 68,000 hectares, 70% of which was planted with fast-growing eucalyptus, from Shell Renewables. Shell had established the plantations between 1991 and 2001 for future bioenergy, but sold their interests in 2004. MagIndustries opened a 500,000 tonnes per year wood chipping plant in 2008, but all their woodchip sales so far appear to have been for pulp and paper. Since 2011, their efforts have been thwarted by unauthorised clearcutting of the plantations, which a 2012 article links to big landowners in the area. Today, the company’s website no longer mentions any biomass-related plans.

In 2011, it was reported that the **Egyptian United Company for Land Reclamation and Agro-Industries** had exported 10,000 tonnes of pellets to Italy and other Mediterranean countries in Europe during 2009 and 2010. According to the company website, they commissioned a 25,000 tonnes per year pellet plant at Ben-Suef in 2008, with the intention of doubling production the following year. However, the company appears to have issued no more recent announcements. It is not clear whether the pellet plant remains operational and whether exports to Europe are ongoing. However, 25,000 tonnes of pellets would only be enough to supply a small 5 MW biomass plant.

The Norwegian company **Green Resources Ltd** describes itself as *“Africa’s leading forestation company and a leader in East African wood manufacturing”*. According to their website, they

have established 26,000 hectares of tree plantations in **Tanzania, Mozambique and Uganda**, with major expansion plans in all three countries. At the time of writing this report, Green Resources is in the process of acquiring Global Solidarity Forest Fund, which will increase their tree plantation area to 40,000 hectares. This is greater than that of any other company in Africa, excluding South Africa. Global Solidarity Forest Fund (GSFF) is a Nordic investment fund founded by the Swedish Diocese of Vasteras, the Lutheran Church of Sweden and the Norwegian Lutheran Church Endowment, with subsequent investments by the Dutch pension fund ABP. A plantation company in which GSFF is the main investor, Chikweti Forests in Mozambique, has been under heavy criticism from national and international groups and also from a Mozambican government agency for taking over farmers’ land for tree plantations, for establishing plantations illegally, for avoiding required community consultations, for clearcutting forests and native fruit trees, and for evicting farmers⁷⁵.

The serious social and environmental impacts of one of Green Resources’ eucalyptus and pine plantations in Tanzania are analysed in a report by the South African NGO coalition Timberwatch⁷⁶. According to their 2008/09 Company Report, they were *“growing trees to generate carbon credits and bioenergy and to manufacture wood products”*. The Green Resources website mentions potential use of wood for pellets in relation to the largest of their eight plantation investments the Lurio Plantations in Mozambique. They also mention a general intention to supply bioenergy markets elsewhere on their website⁷⁷. Green Resources are clearly keeping open the option of supplying wood to

whoever offers a lucrative market. However, production of sawn logs, utility poles and charcoal production for local markets from residues are listed as the main purposes of their plantations. They also hope to profit from carbon credits. All of their existing and proposed investments in wood processing industries involve saw mills, door and utility pole production and charcoal retorts. They do not include pellet production or infrastructure associated with woodchip exports.

Although **Mozambique**, especially Niassa Province, is being heavily targeted by foreign companies taking over land for tree plantations, we could find no evidence of any biomass-related investments or concrete plans to export woodchips or pellets for energy.

Between 2008 and 2012, the Dutch NGO **Solidaridad** worked with **GDF Suez** and the Mozambican NGO, Abiodes, to investigate and develop a biomass supply chain from Mozambique to the Netherlands. They received funding for this from the Dutch government and the European Commission. The project looked at developing both conventional and torrefied bamboo wood pellets for export. The project conclusion was that no convincing business case for pellet exports from Mozambique to Europe could be made: Not enough ‘underutilised biomass’ existed to justify exports, pellets could not compete with those produced in Russia, Canada or, potentially, Brazil, and the logistical infrastructure for such exports was lacking. Pellet production for the domestic market was economically more feasible, but would nonetheless be challenging.

Miro Forestry – has been mentioned above in the section on Ghana. Miro state that they have a

long-term lease for a 21,000 hectare eucalyptus and pine plantation in **Sierra Leone**, intended to produce transmission poles for the domestic market and lumber, pulp and biomass for the European and North American markets. No biomass-related investment has been announced.

Clearly, this company is simply keeping open different options of supplying whichever markets will be lucrative in future.

Two other companies have acquired land for tree plantations in **Sierra Leone** and have referred to interests in biomass, but not in biomass exports. One is **EcoTech Timber**, based in the US, who have acquired a long lease for an 'afforestation' project using fast-growing Paulownia trees. They have been seeking carbon offsets and, according to their website, have been looking at future domestic electricity, second-generation biofuel and charcoal production (for fuel and biochar). However, their website has not been updated for over a year and web searches do not reveal any recent information about the progress of this project. The other company is **Sierra Gold Corporation**, a Canadian mining company. They claim to have over 28,000 hectares leased and, in a call to investors, proposed a biomass project with a pyrolysis plant, biochar as well as briquette production. In 2009, they proposed a CDM project involving Paulownia tree plantations for the production of charcoal for pig iron production. Their website, however, does not currently refer to any biomass plans.

In **Costa Rica**, a newly founded company "active in the acquisition of land assets, real estate development, and in funding green technology initiatives"⁷⁸, **Grupon Brio**, recently announced that they were looking at potential investments in wood pellet

production for export to Europe, using fast-growing non-native *Gmelina arborea* trees⁷⁹. It is not clear how credible this proposal is, but the business people involved obviously consider that citing EU biomass demand will help them attract investment.

In **Chile**, a Swedish and a Japanese company respectively, have invested in two pellet plants. A third one, built by a domestic company, has reportedly been closed.⁸⁰ The Swedish investment company JCE Group built a 50,000 tonnes per year pellet plant next to a sawmill. JCE Group own one of the largest pellet producers and exporters in the US, GreenCircle Bioenergy. However, their pellet plant in Chile focusses entirely on the domestic market. The Japanese Somitomo Corporation entered into a joint venture with a Chilean company to build a smaller, 10,000 to 20,000 tonnes per year pellet mill, also targeted entirely at domestic users. There are no published plans for pellet exports from Chile.

Although few industry sources have suggested that South, Southeast and East Asia are likely to become future sourcing regions for European biomass, the Dutch government has funded two pilot projects in **Vietnam** to explore the potential for biomass exports to Europe. One of these was carried out by the Dutch energy company **Eneco**, who aimed to set up a 150,000 tonnes per year pellet plant using wood residues from the Vietnamese furniture industry. Eneco abandoned this project in 2012. They concluded that the production and import of such pellets was not economically feasible⁸¹.

The other project was carried out by the Dutch company **BioCandeeo NV** in partnership with Bamboo Matters Ltd and a Vietnamese

University. It explored the potential for large-scale bamboo pellet exports from 'waste streams'. Although no full evaluation of the project has been published, the Dutch government issued a report about the potential for biomass from Vietnam in 2012, in which they noted that the required technologies for producing pellets or briquettes on a large scale were not available in Vietnam and that bamboo plantations commonly resulted in deforestation.

Conclusions of the current status of land-grabbing in the global South in relation to EU biomass demand

Four key mechanisms were identified by which EU biomass demand could result in more land-grabbing in the global South. The first of these – land-grabbing resulting in actual production of woodchips or pellets which are exported to Europe – appears unlikely in the near future as the evidence presented in this report shows. As long as companies and governments in Canada and the US continue to support the expansion of domestic pellet industries regardless of the destruction caused to native forests, the wider economic picture of a growing North-to-North trade appears unlikely to change. Furthermore, EU pellet and other biomass imports from Russia are widely expected to grow and to be more competitive than ones from the global South.

This overall trend does not preclude individual biomass export projects from Africa and South America to the EU – such as AfriRen’s biomass exports from Ghana to Denmark (which relies on existing plantations and on woodchips, which are far easier and cheaper to produce than pellets). Even if residues from existing plantations are used, such projects could in individual cases raise the profitability of such plantations and thus incentivise new land grabs. However, in the absence of large-scale pellet trade investments in the South, those impacts are likely to remain quite limited.

The second mechanism identified involved tree plantation expansion in the South as a form of indirect land use change, due to diversion of wood away from existing markets (pulp and paper, panel board, etc) towards bioenergy. This scenario appears highly likely. After all, it is clear that

diversion of wood away from existing markets and towards EU biomass is already happening and this trend will almost certainly intensify as EU biomass demand increases. Given that the global and EU demand for paper and for panel board are not predicted to decline, the shortfall will have to be met from other regions, most likely including ones in the global South. It would, however, require a separate investigation to establish the extent to which bioenergy is already affecting global pulp and paper, panel board and charcoal markets and leading to increased tree plantation investments in the global South.

The third mechanism was that of investors citing EU biomass demand to attract investment into land-grabs without any definite intention to produce wood for EU power stations, stoves or boilers. The evidence reported above strongly suggests that this is happening. Some of the investments mentioned here may turn out to be entirely speculative, with the true intention being to profit from subsequent sales of land-rights. Field-visits or long-term observations of company records would be required to ascertain whether this is the case. However, companies such as Green Resources, Mere Environmental and Suzano Papel e Celulose are clearly investing in large-scale tree plantations. Suzano’s previous claims about seeking to invest in pellet production for Europe appear to have been genuine, even if unfavorable economics has forced them to change plans.

Other plantation companies may well have hyped up the prospects of future wood supplies for EU biomass markets, in order to attract investments. For example,

it is difficult to regard Mere Environmental’s announcement about imminent plans for a storage and processing facility for Ghanaian teak woodchips in Wales as genuine. After all, they are still in the early stages of establishing their first tree plantations in Ghana, the teak will not be mature for over a decade and teak is high-quality tropical hardwood, which will always attract higher prices as sawn wood than for energy. And it is difficult to believe that the directors of African Plantations for Sustainable Development, to cite another example, would genuinely believe that they could establish more dedicated biomass power station capacity in Ghana than exists in, say, the UK.

Other companies, including Green Resources, simply list a large range of potential markets for wood and appear to be seeking to keep their supply options open. Nonetheless it is interesting to note how many plantation companies refer to EU biomass as a potential future market, in countries where none of the infrastructure for pellet production and export is even planned. Perhaps such optimistic forecasts are primarily used to attract more investment, constituting another indirect impact of EU biomass policies? Miro Forestry’s correspondence with GZ Invest certainly suggests that claims about EU biomass have been used for this purpose

Regarding the fourth mechanism, the ‘copycat’ effect of EU biomass policies, no conclusions can be drawn from the information above. However, biomass policies are being promoted in Southern countries by private-public partnerships involving EU governments and European companies, such as Sustainable Energy for All. And, as shown

above, tree plantation expansion for biomass is no less damaging if it is destined for the domestic market (e.g. in Brazil) rather than for pellet exports to the EU.

What are the consequences of these findings?

a) It currently seems that the burgeoning EU biomass demand will be met almost exclusively with wood from temperate and boreal zones for the foreseeable future. On the one hand, this means that there is unlikely to be a direct link between (most) EU biomass sourcing and land-grabbing in the global South. On the other hand, the impacts on temperate and boreal forests will be even more severe than anticipated.

b) Of the six million hectares of land-grabs identified in Africa by ActionAid as having been for EU biofuel production, hardly any have resulted in actual deliveries on biofuel feedstock to Europe. Thus even in the case of biofuels, where there is an expanding South-to-North trade, links between land-grabs and biofuel production are much more tenuous and indirect than is widely thought. Key factors behind biofuel-related land-grabbing include an inflated picture of future EU demand, investor enthusiasm about the promise of long-term price rises due to EU policies, the exploitation of this expectation for purely speculative purposes and indirect impacts (mediated through commodity price rises and displacement). All of these are obvious results of EU biomass policies, too. The potential for land-grabs in the global South that are indirectly related to EU biomass demand is therefore huge.

c) Sustainability standards, including possible social criteria could not possibly mitigate against

indirect impacts, such as land-grabs, that do not result in actual pellet or woodchip supplies for EU energy generation. As long as EU bioenergy policies push up the global demand for wood and thereby wood commodity prices and investors' confidence in timber-related markets, land-grabbing for tree plantations will escalate.

References

- 1 http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Renewable_energy_statistics#Further_Eurostat_information – download “Renewable Energy: Table and Figures”
- 2 The role of bioenergy in the National Renewable Energy Action Plans: a first identification of issues and uncertainties, Bogdan Atanasiu, IEEP, November 2010, http://www.ieep.eu/assets/753/bioenergy_in_NREAPs.pdf
- 3 NREAPs and IEEP report
- 4 Flows of Biomass to and from the EU: an analysis of data and trends, James Hewitt, Fern, July 2011, http://www.fern.org/sites/fern.org/files/Biomass%20imports%20to%20the%20EU%20final_o.pdf
- 5 <http://www.elp.com/articles/2013/07/europe-subsidy-cuts-hurting-biomass-sector.html>
- 6 <https://www.gov.uk/government/publications/uk-bioenergy-strategy>
- 7 This calculation is necessarily imprecise because there are uncertainties not just over the total energy demand in 2020 but also about the proportion of biomass that would be used in heat, transport and electricity and about the efficiency levels reached in different sectors.
- 8 Total energy demand in the UK was 142.8 mtoe (mega tonnes of oil equivalent) in 2012 [https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/244767/chapter_1_overall_factsheet.pdf, page 3]. This converts to 1,660,764,000 MWh. 11% of this is 182,684,040 MWh. Based on the assumption that biomass power stations would operate for an average of 8000 hours a year, this would translate into 22,835.505 MW of biomass power station capacity. It is estimated that a 100 MW biomass power station will require around 1 million tonnes of wood so 22,836 MW would require around 228million tonnes.
- 9 Figure calculated from data at <http://www.biofuelwatch.org.uk/wp-content/maps/uk-biomass.html>
- 10 See <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:01:EN:HTML>
- 11 <http://www.biofuelwatch.org.uk/2014/biomass-sustainability-standards-briefing/>
- 12 http://ec.europa.eu/energy/doc/2030/com_2014_15_en.pdf
- 13 http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Biofuels%20Annual_The%20Hague_EU-27_8-13-2013.pdf
- 14 <http://pellets-wood.com/eu-countries-total-net-imports-of-wood-pellets-ros-011944.html>
- 15 www.prweb.com/releases/paper_and_paper_products/printing_corrugated_boxes/prweb9148710.htm
- 16 Global Wood Pellet Industry Market and Trade Study, IEA Bioenergy, December 2011, www.bioenergytrade.org/downloads/t40-global-wood-pellet-market-study_final.pdf
- 17 UK Bioenergy Strategy 2012, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48337/5142-bioenergy-strategy-.pdf
- 18 UK and Global Bioenergy Resources, AEA, March 2011, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48059/1464-aea-2010-uk-and-global-bioenergy-report.pdf
- 19 Biomass 2020: Opportunities, Challenges and Solutions, Eurelectric, October 2011, http://www.eurelectric.org/media/26720/resap_biomass_2020_8-11-11_prefinal-2011-113-0004-01-e.pdf
- 20 <http://www.yorkshirepost.co.uk/business/business-news/drax-shows-abroad-outlook-on-pelleting-plants-1-4289216> and <http://www.thisisswindontownfc.co.uk/news/9612722.print/>
- 21 Impact of EU Bioenergy Policy on Developing Countries, http://www.ecologic.eu/files/attachments/Publications/2012/2610_21_bioenergy_lot_21.pdf
- 22 See for example Wood-Based Bioenergy: The Green Lie, Global Forest Coalition, May 2010, http://globalforestcoalition.org/wp-content/uploads/2010/10/briefing-paper-bioenergy_final_11.pdf
- 23 Biomass energy: Another driver of land acquisitions?, Lorenzo Cotula, IIED, August 2011, <http://pubs.iied.org/pdfs/17098IIED.pdf>
- 24 Called “planted forests” by the FAO, a term condemned by many forest campaigners because it hides the fundamental difference between genuine forests and industrial tree plantations and allows the latter to be promoted through policy support measures and funds for ‘afforestation and reforestation’.
- 25 See author’s elaboration of FAO figures in “Global tree planting expansion: a review” by by Markus Kroegeer, ICAS Review Paper Series 3, October 2012
- 26 <http://www.corporatewatch.org/?lid=4108>
- 27 Plantations, Poverty and Power, Chris Lang for the World Rainforest Movement, December 2008, <http://chrislang.org/2009/02/06/plantations-poverty-and-power-section-4/>
- 28 <http://www.tni.org/primer/global-land-grab#whatislandgrabbing>
- 29 J.F. McCarthy, J.A.C. Vel and S. Afiff (2012) “Trajectories of land acquisition and enclosure: development schemes, virtual land grabs, and green acquisitions in Indonesia’s Outer Islands” Journal of Peasant Studies 39(2)
- 30 Adding Fuel to the Flame: The real impact of EU biofuels policies on developing countries, ActionAid, 2013,

References

- http://www.actionaid.org/sites/files/actionaid/adding_fuel_to_the_flame_actionaid_2013_final.pdf
- 31 <http://www.ecofys.com/files/files/ecofys-2013-report-on-land-grabbing-for-biofuels.pdf>
- 32 The EU Biofuel Policy and Palm Oil: Cutting subsidies or cutting rainforest?, GSI and IISD, September 2013, <http://www.iisd.org/gsi/biofuel-subsidies/the-EU-biofuel-policy-and-palm-oil-2013>
- 33 Price volatility and food security, High Level Panel of Experts on Food Security and Nutrition, FAO, 2011
- 34 <http://www.srs.fs.usda.gov/futures/reports/draft/Frame.htm>
- 35 E.g. http://www.nytimes.com/2011/09/26/business/global/questioning-europes-math-on-biofuels.html?_r=0
- 36 Rising Global Interest in Farmland, World Bank, 2010, http://siteresources.worldbank.org/INTARD/Resources/ESW_Sept7_final_final.pdf
- 37 <http://www.srs.fs.usda.gov/futures/reports/draft/Frame.htm>
- 38 Global Review of Dedicated Woody Biomass Plantations, Bob Flynn, Director of International Timber, RISI, June 2010, <http://www.jopp.or.jp/event/%B3%A4%B3%BO%A4%CB%A4%AA%A4%B1%A4%EB%CC%DA%BC%C1%A5%DO%A5%A4%A5%AA%A5%DE%A5%B9%BF%A2%CE%D3%BC%C2%BB%DC%B2%C4%C7%BD%Co%AD%C4%B4%BA%BA.pdf>
- 39 <http://www.timberwatch.org.za/index.php?id=99>
- 40 Life as Commerce: Certification in South Africa, Wally Menne and Blessing Karumbidza, Global Forest Coalition and Timberwatch, 2008, <http://globalforestcoalition.org/wp-content/uploads/2010/12/LIFEASCOMMERCE-CERTIFICATION1.pdf>
- 41 GF Energy has since been acquired by the Danish energy company Verdo Group.
- 42 http://www.landmatrix.org/get-the-detail/by-target-country/ghana/?order_by=&starts_with=G – note that Land Matrix state that it is uncertain whether one intended 450,000 hectare contract has actually been signed.
- 43 www.fcghana.org/assets/file/Publications/Forestry_Issues/National%20Forest%20Plantation%20Development%20Programme/Annual%20Reports/nfpdp_annual_report_2011.pdf
- 44 http://www.fcghana.org/library_info.php?doc=56&publication:Report%20on%20Export%20of%20Wood%20Products%20%28Timber%20Industry%20Development%20Division%29&id=16
- 45 According to the website of Takoradi Renewable Energy Ltd, the company is fully owned by AfriRen. However their preliminary Environmental Assessment report for the project in 2011 states that they are a 50:50 Joint Venture between AfriRen and La Societe Biokola, a company based in Cote d'Ivoire.
- 46 SIFCA is a large agribusiness corporation in West Africa, part-owned by Singapore-based Wilmar International and Olam International. They heavily invest in oil palm and in rubber plantations.
- 47 Note that the Randers plant has a very different design to that of most coal power stations, including to that of all larger UK coal power stations. This is why it can burn woodchips rather than just pulverised wood pellets – something that would be impossible for example for Drax.
- 48 This excludes charcoal imports, which tend to be for barbecues, small-scale domestic use and industrial use of activated carbon rather than for industrial heat and power generation.
- 49 <http://www.ghanabusinessnews.com/2012/05/23/workers-of-ghana-rubber-estates-demonstrate-over-poor-remuneration/>
- 50 100-150 tonnes a day available, projected demand by Abellon 200-250 tonnes a day: <http://mci.ei.columbia.edu/files/2013/08/Pangea-Report-Sokoban-Wood-Village.pdf>
- 51 <http://ghgeospatialforum.org/2014/images/pp/Pragnesh.pdf>
- 52 No formal group structure has been declared except that Blue Energy Ghana LL holds 50% of the shares in Mere Power Ltd. However, the same directors appear to use all company names at different times, yet all significant assets are held by Mere Plantations Ltd.
- 53 ABREC is a semi-governmental organisation supported by African development banks, West African government and institutions.
- 54 See for example <http://www.framtiden.no/english/pulp/aracruz-and-the-rain-forest.html>
- 55 Aracruz Celulose merged with VCP to become Fibria in 2009.
- 56 <http://www.ref.org.uk/roc-generators/search.php?mode=client&rid=&GeneratorName=&CtryCode=&kwaction>equals&InstalledkW=&TechGroup=BM&TechCode=&dateaction>equals&AccreditationDate=&Location=&CHP=&turbineaction>equals&NumTurbines=&TurbineModel=&HubHeight=&BladeDiam=&Developer=&Operator=&SiteOwner=&Postcode=&save=Search> – figures based on ROCs returns up to July 2013, excluding plants which have not been in operation for a year or longer
- 57 <http://www.heliusenergy.com/>, update on Avonmouth Dedicated Biomass Project
- 58 Stool lands are lands owned by pre-colonial communities and Ghana's constitution recognises that they are held in trust for the community and in accordance with customary law and practice.
- 59 <http://judicial.gov.gh/ejudgment/subjectmattersearch.php?q=&nav=default&mainnav=rulings&year=#>
- 60 http://www.adomonline.com/news_details.php?article=12521

References

- 61 <http://www.ejolt.org/wordpress/wp-content/uploads/2012/06/EJOLT-Report-3-low1.pdf>
- 62 Cited in <http://www.corporatewatch.org/?lid=4108>
- 63 <http://globalforestcoalition.org/wp-content/uploads/2012/10/GE-Trees-COP11-FINAL.pdf> and <http://globaljusticeecology.org/connections.php?ID=612>
- 64 <http://climate-connections.org/2013/12/10/urgent-brazil-to-vote-on-terminator-to-allow-use-of-ge-trees/> and <http://www.theguardian.com/global-development/2013/dec/12/brazil-gm-terminator-seed-technology-farmers>
- 65 <http://www.internationalforestindustries.com/2013/01/25/brazil-%E2%80%93-the-world%E2%80%99s-largest-industrial-eucalypt-estate/>
- 66 <http://www.jopp.or.jp/event/%B3%A4%B3%BO%A4%CB%A4%AA%A4%B1%A4%EB%CC%DA%BC%C1%A5%DO%A5%A4%A5%AA%A5%DE%A5%B9%BF%A2%CE%D3%BC%C2%BB%DC%B2%C4%C7%BD%Co%AD%C4%B4%BA%BA.pdf>
- 67 http://ieabioenergytask43.org/wp-content/uploads/2013/09/IEA_Bioenergy_Task43_PR2011-02.pdf
- 68 Those are not GE trees, although GE technologies are being developed to alter lignin content of eucalyptus.
- 69 http://ieabioenergytask43.org/wp-content/uploads/2013/09/IEA_Bioenergy_Task43_PR2011-02.pdf
- 70 www.pwc.com/ca/en/forest-paper-packaging/publications/pwc-don-roberts-presentation-2013-05-en.pdf
- 71 www.open.ac.uk/technology/mozambique/sites/www.open.ac.uk.technology.mozambique/files/pics/d137384.pdf
- 72 http://www.bioenergytrade.org/downloads/t40-global-wood-pellet-market-study_final.pdf
- 73 <http://www.conbio.info/post/brazil-new-pelletplant-on-line-2014-all-production-sold-to-italy/>
- 74 <http://biofuelwatch.org.uk/wp-content/uploads/eucalyptus-plantations-for-energy-online.pdf>
- 75 <http://wrm.org.uy/articles-from-the-wrm-bulletin/section2/mozambique-more-denunciations-against-chikweti-a-company-financed-by-a-nordic-solidarity-fund/>
- 76 [http://timberwatch.org/uploads/TW%20Tanzania%20CDM%20plantations%20report%20low%20res%20\(1\).pdf](http://timberwatch.org/uploads/TW%20Tanzania%20CDM%20plantations%20report%20low%20res%20(1).pdf)
- 77 E.g. <http://greenresources.no/Portals/0/Press%20release-%20Niassa%20CDM%20registration%20140408%20final.pdf>
- 78 <http://cr.linkedin.com/in/charlesgohmann>
- 79 <http://amcostaricaarchives.com/2014/04/energy-firm-seeks-to-tap-the-market-for-wood-pellets-here-and-abroad/>
- 80 <http://www.biomasspelletplant.com/news/latin-pellet-market.html>
- 81 <http://english.rvo.nl/sites/default/files/2014/02/Public%20final%20report%20DBI%2001002%20Vietnam.pdf>