

# Mapping Pulp Mill Expansion



## Risks and Recommendations

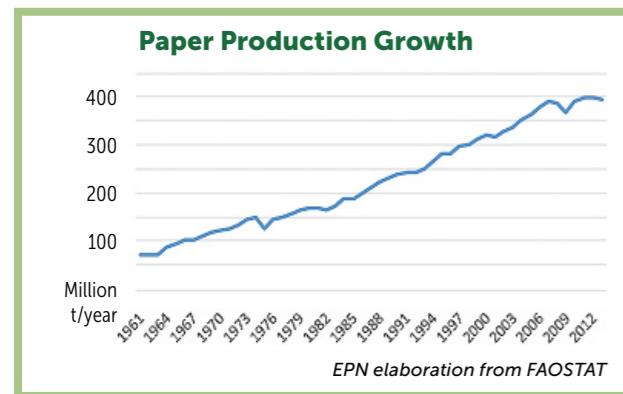
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# 1. An Assessment of the Future Pulp Industry

Global paper consumption has been growing at a steady rate for decades, and has quadrupled since 1960. Around the world we use about one million tonnes of paper every day. And our paper consumption is growing.



Paper plays an important role in civilisation, supporting literacy, democratic participation and hygiene. However its consumption is not equally distributed: only 10 % of the world's population, (those in Western Europe and North America), consume more than half of the worldwide supply of paper.

Although paper recovery and recycled pulp manu-

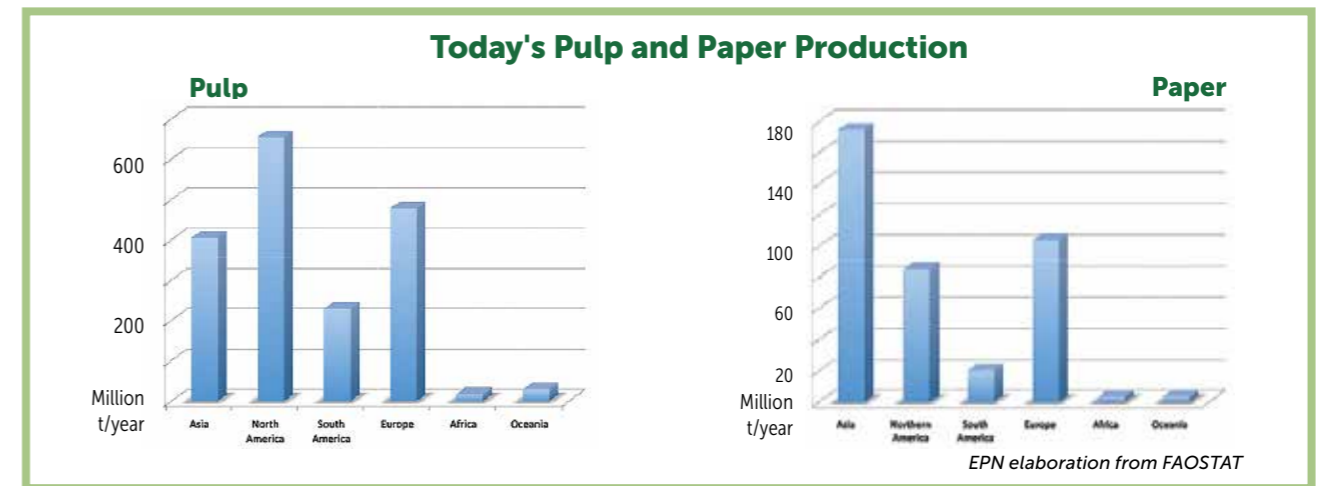
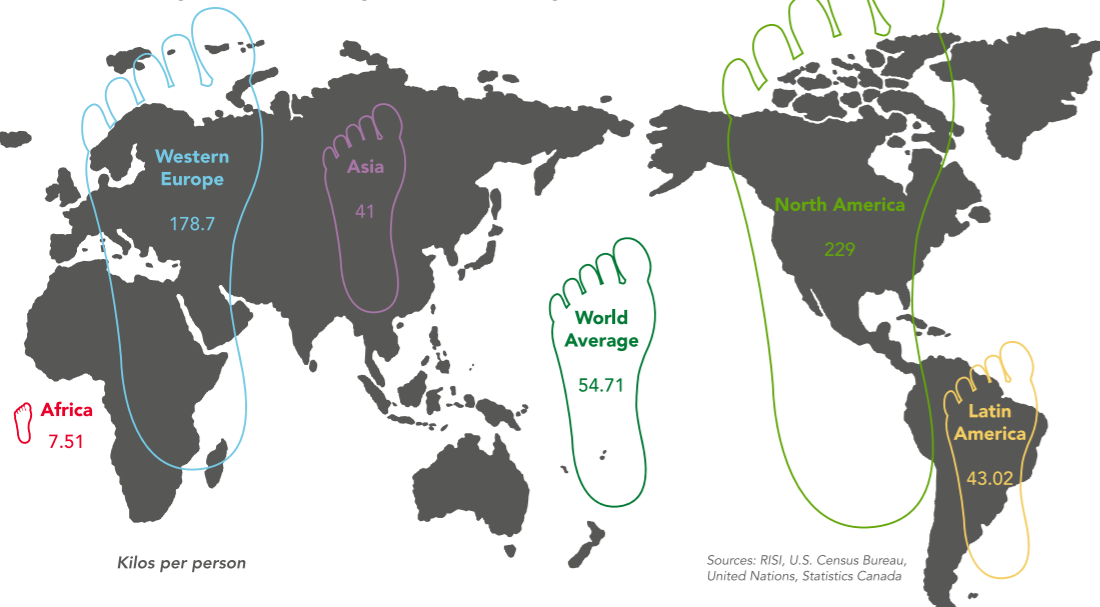
facturing has increased in the last decade, virgin pulp production for paper and board products is still one of the main drivers pushing the expansion of intensively managed tree plantations. While many companies have stopped large scale conversion of natural forest for the establishment of pulp plantations, others are still establishing plantations by clearing precious habitats, causing social disasters, negative impacts on the environment and releasing carbon dioxide, which contributes to climate change. As blocks of plantation trees hold only a fraction of the plant and animal species found in natural ecosystems, they adversely affect local biodiversity, threaten water-shields and can cause severe soil erosion. They often also negatively impact local communities' water resources and traditional uses of the land.

Further impacts of the pulp industry are caused by the mills, as the processing of pulp and paper consumes vast amounts of energy and can release a wide range of polluting compounds into the environment.

Based on the assumption that both population and demand for paper will grow, paper production and consumption might also rise dramatically over the next decades<sup>1</sup>, which means the impacts of the pulp and paper sector could increase sharply.

While people and countries who are not getting all the advantages paper brings could potentially benefit from increased access to paper, it is crucial to significantly reduce consumption in developed countries, to reduce overall wasteful consumption, and to invest in recycling, in improved forest and plantation management, and in clean production processes.

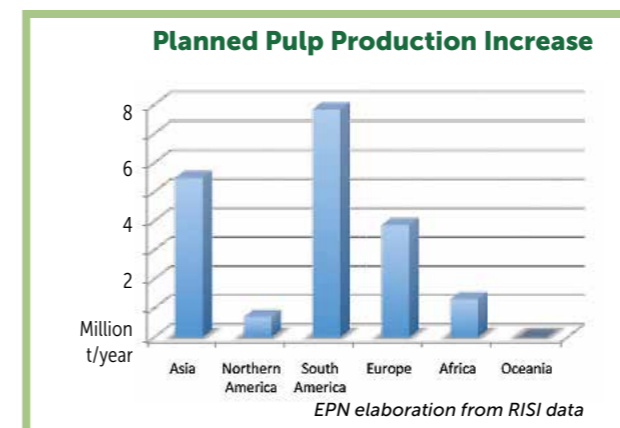
## Annual Paper Consumption Per Capita



The use of recycled fibres and of sustainably grown and harvested agricultural residues should be maximised and wood fibres should only be sourced from known sources, that can prove that the timber was sustainably grown.

This report focuses only on the upcoming virgin wood fibre pulp mills as those could have a direct impact on the surrounding forests and land-use. Some pulp mills might also source woodchips from further afield, as these are internationally traded, and potentially impact different parts of the world. There are also a growing number of recycled pulp mills or mills using agricultural residues. These are not analysed in this report as they don't use timber.

Increase of capacity in pulp mills must not be confused with actual pulp production capacity. While most of the pulp production capacity



increase is expected to take place in Asia, Russia and South America, the actual pulp and paper production (and consumption) is still concentrated in Asia, North America and North and Western Europe. Pulp production is still growing in Asia, but considerably shifting from North America to South America, notably Brazil. Furthermore, the majority

of pulp production capacity expansion in Europe (3.8 million tonnes per year) will be located in Russia (2.7 million tonnes per year) and in smaller part in Belarus, marking a strong shift of pulp production towards the east.

But regardless of where the pulp expansion takes place, there are risks that are common to the sector and can therefore occur in all continents. The main risks are:

- When timber comes from natural forests, there is a high risk of deforestation or forest degradation.
- When timber comes from plantations the risks are:
  - that the plantations will be established by converting natural forests or other High Conservation Value areas, causing deforestation or forest degradation;
  - that they will be developed on land that local people depend on and that the plantation was established without their free, prior and informed consent;
  - that they will reduce water availability
- For all mills there is also a serious risk of pollution, unless they are built in countries that are able to enforce environmental standards.

These risks need to be carefully assessed and avoided. Companies should only implement projects if all appropriate measures have been taken to avoid these risks. Financial institutions should not invest in any new mills unless they have guarantees that the company will not cause any of the impacts related to these risks, and governments should establish a legal framework that makes it illegal for companies to cause such impacts.

1 WWF, Living Forests Report, 2012, [www.panda.org/livingforests](http://www.panda.org/livingforests)

## 2. Mapping New Pulp Mills

Mills need a lot of timber. If they start operating before sufficient well managed forest areas are secured or enough responsible plantations are established, they can lead to overexploitation of forests in the surrounding areas. Unlike a paper mill, a pulp mill based on wood fibre needs to be located near its timber sources (forests or plantations) in order to be economically viable, normally they should be within 200 km, at least in the absence of railway or waterway connections (with the exception of the Chinese and Japanese markets using woodchips<sup>2</sup>). The area where the mill will be built is a good indication of which forests will be logged or where plantations will be developed in order to feed the mill.

Size also matters: the bigger the mill, the larger the footprint on the landscape that will be affected in order to feed it. To identify the possible impacts of pulp production expansion on local forests, the planned new pulp mills have been overlaid with the following maps:

- Intact Forest Landscapes (IFL): a concept developed by Greenpeace, Global Forest Watch and World Resources institutes (WRI), which identifies the still unbroken wide areas of forest ecosystems that show no signs of significant human activity and that are large enough for all native biodiversity, including viable populations of wide-ranging species to be maintained<sup>4</sup>.

- Priority Ecoregion: a concept developed by WWF, based on WRI analysis, to identify the places with a high concentration of biodiversity and endangered species, and where action needs to take place in order to maintain their ecological integrity<sup>5</sup>.
- Deforestation Fronts: a concept developed according to the WWF Living Forests model, which identifies areas where deforestation is likely to occur by 2030, and where large areas of remaining forest will continue to be degraded by agriculture expansion, infrastructure, mining, wood harvesting, fires and plantation establishment<sup>6</sup>.

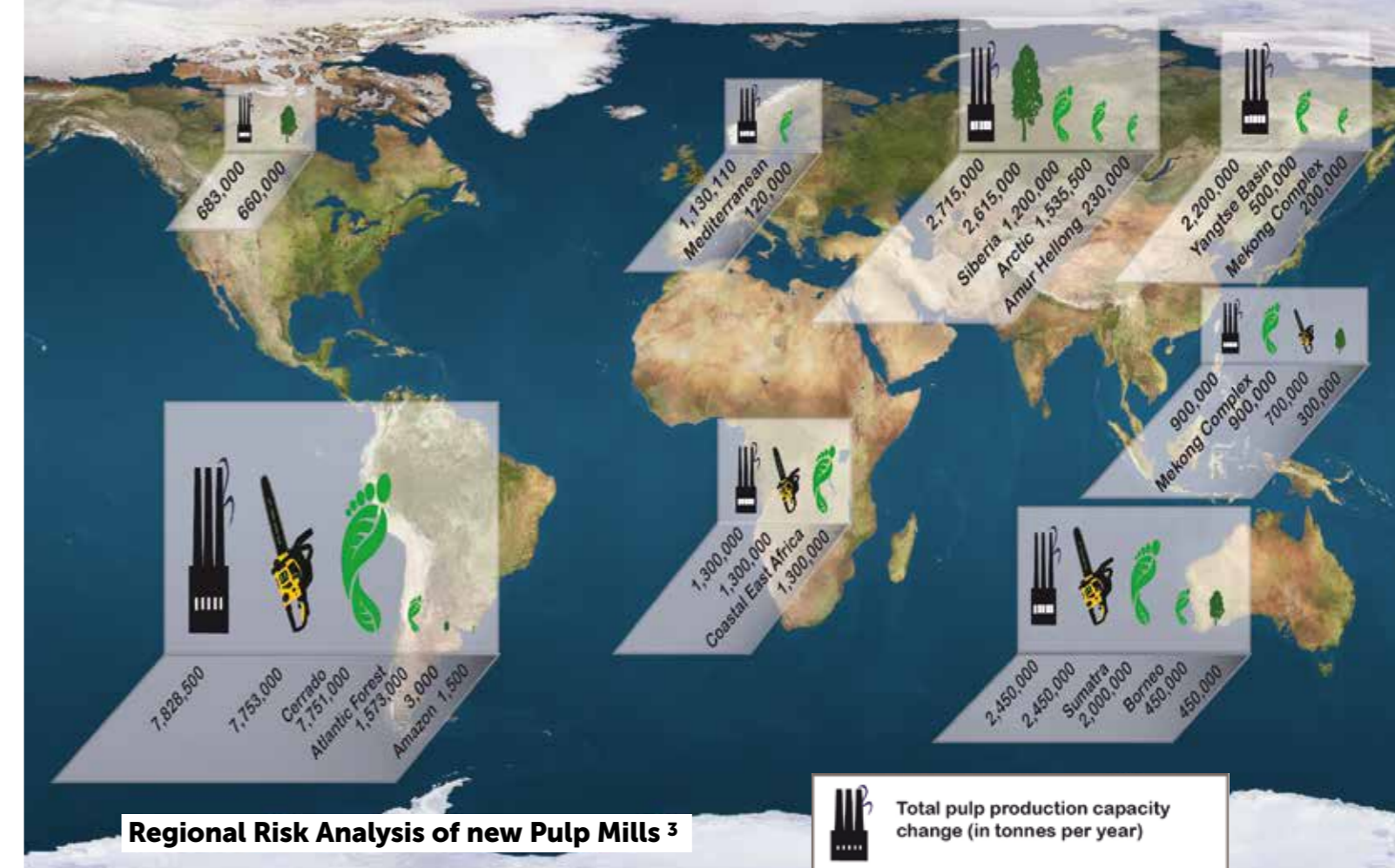
<sup>2</sup> Land rental prices in China and Japan exclude tree plantations from good quality land, affecting their extension and their productivity. Consequently, pulpwood production is not sufficient to meet the demand, and the high prices make long distance transport economically sustainable. RISI, 2012 The China Pulp Market: A Comprehensive Analysis and Outlook, 2012. [www.risiinfo.com/risi-store/do/product/detail/china-pulp-study.html?source=PA1209SF](http://www.risiinfo.com/risi-store/do/product/detail/china-pulp-study.html?source=PA1209SF)

<sup>3</sup> The information is from January 1st, 2015 and only refers to already announced new projects (2015-2020), not to existing pulp production capacity. Information about new projects is by definition not complete as projects change continuously. Some of these projects may have been completed meanwhile, some others may have been cancelled or postponed.

<sup>4</sup> Greenpeace, World Resources Institute, Tranzparent World, Department of Geographical Sciences, WWF Russia, Intact Forest Landscapes. [www.intactforests.org](http://www.intactforests.org)

<sup>5</sup> WWF, Priority Ecoregions. [panda.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=d47e21048bf343c3ba769fa4527e5658c](http://panda.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=d47e21048bf343c3ba769fa4527e5658c)

<sup>6</sup> WWF, Deforestation Fronts. [wwf.panda.org/about\\_our\\_earth/deforestation/deforestation\\_front/](http://wwf.panda.org/about_our_earth/deforestation/deforestation_front/)



Regional Risk Analysis of new Pulp Mills<sup>3</sup>

### 2.1. North America

New wood-based pulp mills development is very low in North America (US and Canada). It is expected that there will be four new mills with just 683,000 tonnes/year capacity increase by 2020. This includes plants that will produce pulp and paper from agricultural residues and from paper waste, but these have not been included in our study as they will not use virgin fibres.

Three wood fibre mills are planned in Canada: two in British Columbia and one in Ontario. All three will likely source from Intact Forest Landscapes. In British Columbia a conservation agreement in the Great Bear Rainforest<sup>7</sup> is meant to protect 70% of the natural levels of old-growth forests and control logging practices, while recognizing the First Nations rights. However, the agreement only covers 7% of the province and is still not fully implemented. Logging of ancient trees will continue under this agreement, but at a much reduced rate and within the science-based threshold of 70% of the Range of Natural Variation (RONV)<sup>8</sup> for maintaining healthy forest ecosystems, until the new regulations are fully in place (expectation by late 2015). Unfortunately, due to insufficient implementation, the level of conservation is still much lower<sup>9</sup>.

Logging in the interior of the British Columbia and on Vancouver Island continues at a highly unsustainable pace in original and high conservation value forests to feed existing pulp, paper and sawmills and for raw log exports to the USA and Asia.

<sup>7</sup> Forest Ethics, Greenpeace and Sierra Club BC. Great Bear Rainforest overview, 2012. [www.savethegreatbear.org/files/updates/Feb\\_2012-GBR\\_Update.pdf](http://www.savethegreatbear.org/files/updates/Feb_2012-GBR_Update.pdf); Canopy, Protecting the Great Bear Rainforest. [canopyplanet.org/what-we-do/protecting-ancient-forests/great-bear-rainforest-legacy/](http://canopyplanet.org/what-we-do/protecting-ancient-forests/great-bear-rainforest-legacy/)

<sup>8</sup> Range of natural variation (RONV) refers to the mixture of different kinds of trees that thrived historically in the forests before major logging. For more information, see [www.for.gov.bc.ca/hfd/library/FIA/2010/LBIP\\_9017009a.pdf](http://www.for.gov.bc.ca/hfd/library/FIA/2010/LBIP_9017009a.pdf)

<sup>9</sup> Greenpeace, Canopy, Forest Ethics, From the Ground Up, A Progress Report on British Columbia's Great Bear Rainforest, June 2013. [www.greenpeace.org/canada/Global/canada/report/2013/06/Fromtheground-up-Aprogress\\_report\\_on\\_British\\_Columbia\\_GreatBearRainforest.pdf](http://www.greenpeace.org/canada/Global/canada/report/2013/06/Fromtheground-up-Aprogress_report_on_British_Columbia_GreatBearRainforest.pdf)

### New Pulp Mills and the Risk of Deforestation



It is therefore premature to designate pulp produced from these mills as potentially sustainable.

The situation around the Ontario mill is equally problematic: there is an agreement between several environmental groups and the Forest Products

## 2.2. South America

South America will face an enormous development of wood-based pulp production: 10 new pulp mills will be built (8 in Brazil, and 2 in Chile) for a total production capacity increase of 7,828,500 tonnes/year.

A tiny part of this (just 100,000 tonnes/year) is planned in Chile, with one pulp mill located not far from Intact Forest Landscapes. The vast majority of pulp capacity expansion will be in Brazil. It is expected that most of this capacity increase (7.7 million tonnes/year) will be located near Deforestation Fronts<sup>12</sup> and inside or near the Cerrado biome. Some 1.5 million tonnes/year of production increase will occur near the Atlantic forest biome and 1,500 tonnes/year in the Amazon biome.

The main concentration of pulp mill projects will be in the eastern area of Mato Grosso do Sul,

Association of Canada to develop conservation and protection plans called the Canadian Boreal Forest Agreement<sup>10</sup>. According to environmental groups, it is still far from being implemented and has become more and more controversial due to lack of progress<sup>11</sup>.

with a particular concentration in the Três Lagoas municipality. Here, the last fragments of Cerrado forest have already been converted into eucalyptus plantations in the past decade and the area for plantation expansion will mostly be on degraded pasture land. However, these projects risk driving an indirect deforestation wave by relocating pastures into new areas, possibly into a Deforestation Front. Furthermore, the Brazilian federal government does not have strong protection measures in place, nor a monitoring process for the Cerrado biome, as it has for the Amazon biome. Therefore, a concentration of production capacity, and consequently extensive expansion of plantations in the Cerrado, requires a careful analysis of direct and indirect impacts. An additional risk is that Brazil has approved the use of genetically modified eucalyptus trees, despite the fact that little is known about the environmental impacts of these trees.

## 2.3. Western Europe

Eleven wood-based pulp mills will be built in the European Union, for a total capacity increase of 1,130,110 tonnes/year, mostly in Sweden and Portugal. Local NGOs in both countries criticised some companies in the pulp and paper industry for the practice of clear-cutting in biodiversity-rich natural forests<sup>13</sup>, while some Portuguese NGOs also highlighted the risk of massive expansion of eucalyptus plantations in this small country<sup>14</sup>.

<sup>10</sup> CBFA, Canadian Boreal Forest Agreement Welcomes Forest Innovation Declaration, July 2019. [cbfa-efbc.ca/cbfa-forest-innovation-declaration/](http://cbfa-efbc.ca/cbfa-forest-innovation-declaration/)

<sup>11</sup> Canopy, ForestEthics, Greenpeace, Canada's Boreal Forest - Status report for customers and investors, May 2012, [canopyplanet.org/uploads/BOREAL\\_STATUS\\_UPDATE\\_May2012.pdf](http://canopyplanet.org/uploads/BOREAL_STATUS_UPDATE_May2012.pdf) and Greenpeace, Canadian Boreal Forest Agreement is no longer a credible tool for conservation, December 2012, [www.greenpeace.org/canada/Global/canada/report/2013/03/Greenpeace\\_position\\_on\\_the\\_CBFA-Canadian\\_Boreal\\_Forest\\_Agreement\\_is\\_no\\_longer\\_a\\_credible\\_tool\\_for\\_conservation.pdf](http://www.greenpeace.org/canada/Global/canada/report/2013/03/Greenpeace_position_on_the_CBFA-Canadian_Boreal_Forest_Agreement_is_no_longer_a_credible_tool_for_conservation.pdf)

<sup>12</sup> WWF, Deforestation Fronts. [wwf.panda.org/about\\_our\\_earth/deforestation/deforestation\\_front/](http://wwf.panda.org/about_our_earth/deforestation/deforestation_front/)

<sup>13</sup> Swedish Society for Nature Conservation (Naturskyddsforeningen), Under the Cover of the Swedish Forestry Model, 2011. [www.naturskyddsforeningen.se/sites/default/files/dokument-media/rapporter/Under%20the%20Cover%20of%20the%20Swedish%20Forestry%20Model\\_l%C3%A4guppl%C3%B6st.pdf](http://www.naturskyddsforeningen.se/sites/default/files/dokument-media/rapporter/Under%20the%20Cover%20of%20the%20Swedish%20Forestry%20Model_l%C3%A4guppl%C3%B6st.pdf)

<sup>14</sup> Quercus, Quercus alerta para o aumento da autorização de eucaliptais pelo ICNF, June 2015. [www.quercus.pt/comunicados/2015/junho/4338-quercus-alerta-para-o-aumento-da-autorizacao-de-eucaliptais-pelo-icnf](http://www.quercus.pt/comunicados/2015/junho/4338-quercus-alerta-para-o-aumento-da-autorizacao-de-eucaliptais-pelo-icnf)

## 2.4. Africa

One large pulp mill is planned to be built in Africa, in Mozambique. This mill will have a capacity of 1,300,000 tonnes/year. The company already obtained permissions for eucalyptus plantations on approximately 173,000 hectares in the Zambézia province and it has applied for 183,000 hectares in the Manica province. Much more land will probably have to be turned into plantations in order to feed this big mill. The plantation will be located in forested regions, where deforestation is occurring at a rapid pace, as shown in Global Forest Watch's maps<sup>15</sup>.

The loss of forests is also leading to climate change. In Mozambique, in 2011, 53.1% of greenhouse gas emissions came from land-use change and forestry<sup>16</sup>. The land already identified for the plantations is located in the Eastern Africa Coastal Ecoregion<sup>17</sup>, considered to be a "bird-lover's paradise, with more than 633 bird species found here, 11 of which are endemic"<sup>18</sup>. It is also located on a Deforestation Front<sup>19</sup>, in an area where fires and the expansion of agriculture, livestock, charcoal and fire-wood production are already considered to be the primary causes of deforestation and unsustainable logging is considered to be an important secondary cause.

Developing large-scale eucalyptus plantations in an area already under water stress and at risk of droughts, such as the Manica province, could lead to severe impacts on both natural ecosystems and local agriculture.

According to local organisations, communities lost access to their land in an opaque process which failed to implement Free, Prior and Informed Consent (FPIC) principles<sup>20</sup>. Local peasants consider that large scale, non-food plantations for the global market are not the right development model for a country still struggling to assure food security. These are critical issues, since this is the first plant of this kind in the region (pulp production is intensive in South Africa and to a lesser extent in the Maghreb) and this could be the first of many other projects also requiring large plantations.

<sup>15</sup> Global Forest Watch deforestation, Country profiles, Mozambique. [www.globalforestwatch.org/country/MOZ#](http://www.globalforestwatch.org/country/MOZ#)

<sup>16</sup> Global Forest Watch deforestation, tree cover change and land use maps. [www.globalforestwatch.org/map/3/15.00/27.00/ALL/grayscale/loss,forestgain?begin=2001-01-01&end=2014-01-31&threshold=30](http://www.globalforestwatch.org/map/3/15.00/27.00/ALL/grayscale/loss,forestgain?begin=2001-01-01&end=2014-01-31&threshold=30)

<sup>17</sup> WWF, Priority Ecoregions. [panda.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=d47e21048bf343cba769fa4527e5658c](http://panda.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=d47e21048bf343cba769fa4527e5658c)

<sup>18</sup> WWF, Eastern Africa Coastal Forests - A Global Ecoregion. [wwf.panda.org/about\\_our\\_earth/ecoregions/eastafrica\\_coastal\\_forests.cfm](http://wwf.panda.org/about_our_earth/ecoregions/eastafrica_coastal_forests.cfm)

<sup>19</sup> WWF, Deforestation Fronts. [wwf.panda.org/about\\_our\\_earth/deforestation/deforestation\\_front/](http://wwf.panda.org/about_our_earth/deforestation/deforestation_front/)

<sup>20</sup> Impacto, Zambézia Forestry Project, Environmental Impact Assessment Report, Maputo, June 2014. [ifcextapps.ifc.org/ifcext/spiwebsite1.nsf/0/c183fad2b9cc23d85257d3b005a203d/\\$FILE/Zamb%C3%A9zia%20ESIA\\_Non%20Technical%20Summary\\_unofficial%20translation%20of%20June%20ESIA%20DRAFT.pdf](http://ifcextapps.ifc.org/ifcext/spiwebsite1.nsf/0/c183fad2b9cc23d85257d3b005a203d/$FILE/Zamb%C3%A9zia%20ESIA_Non%20Technical%20Summary_unofficial%20translation%20of%20June%20ESIA%20DRAFT.pdf)

Impacto, Manica Forestry Project, Environmental Impact Assessment Report, Maputo, June 2014. [ifcextapps.ifc.org/ifcext/spiwebsite1.nsf/0/c183fad2b9cc23d85257d3b005a203d/\\$FILE/Manica%20ESIA\\_Non%20Technical%20Summary\\_unofficial%20translation%20of%20June%20ESIA%20DRAFT.pdf](http://ifcextapps.ifc.org/ifcext/spiwebsite1.nsf/0/c183fad2b9cc23d85257d3b005a203d/$FILE/Manica%20ESIA_Non%20Technical%20Summary_unofficial%20translation%20of%20June%20ESIA%20DRAFT.pdf)

**Local peasants consider that large scale, non-food plantations for the global market are not the right development model for a country still struggling to assure food security.**

Foto: ARA, Rainer Tump



## 2.5. Russia

Nine wood-based pulp mills are planned to be built in Russia, leading to a total 2,715,000 tonnes/year production. Three more pulp mills will also be built in Eastern Europe (Belarus), increasing capacity by 560,000 tonnes/year.

In Russia, most of the production (2,615,000 tonnes/year) will be located near Intact Forest Landscapes, which poses a massive threat on the forest integrity unless strong mitigation measures are taken. Around a fifth of this production (535,000 tonnes/year) will be in the Arctic region, while a minor part (230,000 tonnes/year) will be in the Amur Hellong eco-region.

While the western part of Russian boreal forests has been traditionally logged to feed the Scandinavian paper (and timber) industry, the eastern part is

under severe pressure from massive illegal, semi-legal and legal logging of timber to be exported to China. On both the European and Asian sides of Russia, the rapid and massive increase of pulp production capacity, especially near Intact Forest Landscapes, will add more pressure on the world's largest forest.

At these latitudes natural forests regeneration is very slow and the impacts of deforestation and forest degradation are longstanding. Probably not all of these mills will be built, but in some cases the forests are already being logged and the timber is being exported to China <sup>21</sup>.

<sup>21</sup> BankTrack, Angara mill, 2014. [www.banktrack.org/show/dodgydeals/angara\\_paper\\_mill#tab\\_dodgydeals\\_basics](http://www.banktrack.org/show/dodgydeals/angara_paper_mill#tab_dodgydeals_basics)

## 2.6. Asia

The analysis of Asia has been divided into three regions, China, Indonesia and the Greater Mekong, because of the different environments and the different possible impacts.

### China

Wood pulp mill development in China is much lower than paper production development, which is to a large extent based on recycled paper. However it is still significant: 6 new production lines will be built, for a total capacity increase of 2,220,000 tonnes/year. China is not self-sufficient, and timber plantation expansion is constrained by the high cost of suitable land. Therefore we can predict that pulp capacity expansion will imply a growing import of wood chips from other countries: Indonesia, Vietnam, Laos, Thailand and even Australia. It will be key to ensure that the fibre is sourced from well-managed forests and plantations, in order to avoid further deforestation and land-grabbing in the surrounding countries.

Around a quarter of this capacity increase (500,000 tonnes/year) will be located in the Yangtze Basin or

nearby area, while a minor part (200,000 tonnes/year) will come from close to the Greater Mekong complex. Due to proximity to this large river basin, the solution adopted for emission controls and waste management will be crucial to assess their impacts.

### Indonesia

Two new mills will be built in Indonesia, with a total capacity increase of 2,450,000 tonnes/year.

The biggest mill will be built in South Sumatra, with a capacity increase of 2,000,000 tonnes/year. This mill is located near Indonesian Deforestation Fronts <sup>22</sup>, in an area which has been severely deforested. The company committed to stop deforestation and conversion of natural forests into plantations for this mill in 2013 but NGOs still have concerns over its implementation, especially as there is no assurance that deforestation activities will not resume when the moratorium is over. The company now claims to have enough plantation areas to run the mill without clearing more forests. However, there

are still NGOs that express doubts <sup>23</sup> and concerns over the lack of an independent verification and the full implementation of Free, Prior, Informed, Consent (FPIC) principles <sup>24</sup>. Close scrutiny is therefore still needed regarding this project.

A second mill, with a capacity increase of 450,000 tonnes/year is planned in the Indonesian part of the Borneo eco-region, possibly near Intact Forest Landscapes. It is not yet clear whether this mill will be built, as there are no sufficient plantation areas available (nearby mills are already under severe stress in terms of procuring timber). To feed this mill it would therefore be necessary to clear large areas of forest. Unless clear, sustainable plans are provided, this project has to be considered as high risk.

### Greater Mekong Region

Three new wood-based pulp mills will be built in Vietnam, Laos and Thailand with a total capacity increase of 900,000 tonnes/year.

All the pulp capacity installed will be located near Deforestation Fronts and a smaller (300,000 tonnes/year) part will be planned around Intact Forest Landscapes.

These countries are already increasingly exporting wood chips to China and the pressure from both external and internal demand (due to the new mills) could bring further stress to the local forests. In this area, local community rights and livelihoods have been impacted by the expansion of pulp plantations, and social impacts could be a further concern. Last but not least, evaluation on how these mills will deal with emission controls and waste management will be crucial to assess their impacts.

Two further pulp mills will be built in other parts of Asia (Bangladesh and India) possibly impacting on the Himalayas' and Western Ghats' ecoregions, but the production capacity increase is not high (73,000 tonnes/year). The potential impacts of these mills are not well known.

<sup>22</sup> WWF, Deforestation Fronts

<sup>23</sup> Forest Trends: Indonesia's Forestry Industry Relies on Illegal Timber, February 2015. [www.bloomberg.com/news/articles/2015-02-17/indonesia-s-forestry-industry-relies-on-illegal-timber-study](http://www.bloomberg.com/news/articles/2015-02-17/indonesia-s-forestry-industry-relies-on-illegal-timber-study) and Greenomics Indonesia, Does Asia Pulp & Paper have sufficient plantation fibre supply to support its zero deforestation commitment?, November 2014, [greenomics.org/docs/APP-plantation-fibre-supply\\_\(LowRes\).pdf](http://greenomics.org/docs/APP-plantation-fibre-supply_(LowRes).pdf)

<sup>24</sup> Wahana Bumi Hijau (WBH), JPIK South Sumatra, Serikat Hijau Indonesia, Yayasan Bakau, Report on Monitoring of APP's FPIC implementation In Pt. Oki Mill Pulp And Paper, South Sumatra - Indonesia, December 2014. [www.wbh.or.id/download/Final%20Report%20on%20monitoring%20APP%20FPIC%20process%20Eng.pdf](http://www.wbh.or.id/download/Final%20Report%20on%20monitoring%20APP%20FPIC%20process%20Eng.pdf)

**There is no assurance that deforestation activities will not resume when the moratorium in Indonesia is over.**

Foto: RAN, David Gilbert



## 3. Possible Negative Impacts and Mitigation Measures

About 40% of the worldwide commercially harvested industrial roundwood is turned into paper products. New mills will increase the amount of timber needed for paper production, which can come from natural forests, from managed forests or

from plantations. Due to land-use pressure, there is an increased risk that the fibres will be sourced from ill-established plantations, unsustainably managed forests and/or illegally logged forests.

### 3.1. Impacts on Endangered Habitats

Worldwide, the most serious possible impacts occur in endangered habitats. A mill located near Intact Forest Landscapes<sup>25</sup>, High Conservation Value Forests (HCVF) or other habitats identified as precious, suggests the risk of serious impacts on the biodiversity of these habitats. In depth studies are required to assess these risks.

The logging or degradation of High Conservation Value (HCV) habitats should not be allowed under any circumstances. Both the tropics and the boreal forests contain large stretches of endangered habitats.

To analyse a company's likelihood of preventing possible negative impacts and having a forest-friendly development, the following should be looked at:

- how they implement the precautionary principle, as formulated by the Convention on Biological Diversity, to prevent negative impacts<sup>26</sup>;
- if their policy includes elements meant to achieve the goals of EPN's Global Paper Vision;
- their environmental records in terms of fibre sourcing and forest management<sup>27</sup>;
- their provisions to ensure proper implementation of Free, Prior and Informed Consent (FPIC) principles<sup>28</sup>;
- the extent to which the proposed plantations development or natural forest logging overlaps with Intact Forest Landscapes<sup>29</sup>, Deforestation Fronts, or Priority Ecoregions;
- the potential loss of forest and tree cover and the presence of already degraded land<sup>30</sup>;
- general information about the overall deforestation rate in the host country, including the presence of illegal logging<sup>31</sup>.

<sup>25</sup> Greenpeace, World Resources Institute, Transparent World, Department of Geographical Sciences, WWF Russia, Intact Forest Landscapes. [www.intactforests.org](http://www.intactforests.org)

<sup>26</sup> Convention on Biological Diversity, Preamble, 1992. The precautionary principle provides guidance on how "serious or irreversible" harm, as mentioned in the Rio Declaration, should be interpreted in the biodiversity context. It states "where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat". The precautionary principle has subsequently been extensively included in decisions and related work on biosafety marine and coastal biodiversity (Decision II/10, SBSTTA I/8), invasive alien species (Annex, Decision VI/23, see also V/8), the ecosystem approach (Decision V/6), 4 and guidelines on sustainable use (Decision VII/12). [www.cbd.int/doc/articles/2008/A-00637.pdf](http://www.cbd.int/doc/articles/2008/A-00637.pdf)

<sup>27</sup> WWF, Pulp & Paper. [www.panda.org/epci2013](http://www.panda.org/epci2013)

<sup>28</sup> Forest Peoples Programme, Free, Prior and Informed Consent. [www.forestpeoples.org/guiding-principles/free-prior-and-informed-consent-fpic](http://www.forestpeoples.org/guiding-principles/free-prior-and-informed-consent-fpic)

<sup>29</sup> Intact Forest Landscapes, Global Forest Watch, Intact Forest Landscapes. [bit.ly/1BFWHbn](http://bit.ly/1BFWHbn) - See maps at Global Forest Watch, <http://bit.ly/1BFWHbn>

<sup>30</sup> Global Forest Watch, Tree cover change and land use maps. [bit.ly/1eMBm1z](http://bit.ly/1eMBm1z)

<sup>31</sup> Global Forest Watch, Country profiles. [www.globalforestwatch.org/countries](http://www.globalforestwatch.org/countries)

### Clear-Cutting in Boreal Forests

Natural forest logging for pulp production mostly occurs in the boreal forests. They are a green crown, circling the top of the world, extending across northern Europe, Russia, Alaska and Canada. These forests are mostly characterised by coniferous trees (fir, spruce, pine, larch).

While some of this timber is sourced from well-managed forests, too much of it comes from illegal logging and the irresponsible destruction of old-growth and high conservation value forests. In the boreal forests, especially in Canada and Russia, concessions can be large, up to one million hectares. Most of the logging there is done by clear-cutting areas of up to 50 hectares at a time, even in High Conservation Value Forests (HCVF). After overexploitation of more readily accessible forests, logging moves towards less accessible and remote areas, posing a major threat to rich and still untouched Intact Forest Landscapes.

Clear-cuts of intact forest areas and precious habitats are embroiled in controversy with indigenous peoples and are driving the fragmentation and destruction of the boreal forest. Furthermore, in some regions such as eastern Russia, illegal logging and corruption are rampant and forest exploitation is out of control.

Large clear-cutting in the boreal forests has a deep and long-standing impact as in this cold climate re-growth regeneration is very slow. Unsustainable logging and forest management of these fragile natural forests dramatically changes species structure and composition, eliminating sources of berries, mushrooms, nuts and other valuable species. Animal and plant species are substituted by sinantropic and alien species, with a great loss for ecosystems but also for local users.

Impacts on the global climate are also a serious problem. Boreal forests conserve most of their carbon in soil and forest litter. In large areas of Russia, forests grow on a layer of permafrost, protecting it from melting. After unsustainable logging such a forest, there is melting of the permafrost and large volumes of methane (a greenhouse gas that is 30 times more aggressive than carbon dioxide) will be released, accelerating global warming.

Even in Scandinavia, clear-cut logging is still occurring in the remaining fragments of pristine forests. Only 14 % of the ancient forests in the European part of Russia still remain intact, the remaining intact areas being mainly located in just five regions: Arkhangelsk, the Republic of Karelia, the Komi Republic, Perm and Murmansk, with the logging focusing mostly in Arkhangelsk. In Siberian Russia, the intact forest landscapes still contain the major stands of old-growth temperate hardwood forests, a unique biodiversity-rich ecosystem which is home to the last 450 Siberian tigers remaining in the wild. But massive unsustainable and illegal logging is rapidly clearing this vast area of pristine forest. Also Canada's Boreal Forest is being fragmented and degraded by destructive logging. The forefront of this destructive logging is found in the provinces of Ontario and Quebec, but also in Scandinavia, where there are still large but threatened areas of intact forest.

Mitigation measures comprise a sound land-use planning to ensure that intact forests are not further fragmented, as well as sourcing from forests which have a credible, independent, third-party certification for employing the most environmentally and socially responsible forest management and restoration practices. Large scale logging in biodiversity-rich boreal forests which leads to degradation or loss of endangered habitats<sup>32</sup>, High Conservation Value (HCV) ecosystems or High Carbon Stock (HCS)<sup>33</sup> habitats should not be permitted.

<sup>32</sup> Some forests are so rare, threatened or ecologically vulnerable, or are of such global biological or cultural importance that any logging or commercial use could irreparably damage their conservation value. See 'Wye River' discussion document for additional details, Ecological Components of Endangered Forests. [www.greenpeace.org/usa/Global/usa/report/2010/2/endangered-forests-technical-d.pdf](http://www.greenpeace.org/usa/Global/usa/report/2010/2/endangered-forests-technical-d.pdf)

<sup>33</sup> As defined by the FSC and High Conservation Value Resource Network, High Conservation Value (HCV) areas contain particularly important conservation values including rare, threatened and endangered species and their habitat and areas with cultural or livelihood significance for local communities. [www.hcvnetwork.org](http://www.hcvnetwork.org)

## Conversion of Tropical Forests

Despite its concentration in the boreal forests, sourcing of timber from natural forests is also occurring in the tropics, like Indonesia, with even more dramatic impacts. The rich biodiversity, often characterised by endemic species, is threatened, while indigenous peoples and local communities lose access to their garden and to the forest products that sustain their livelihoods. Major pulp and paper companies have recently stopped sourcing directly from natural tropical forests - commitments that still need to be monitored<sup>34</sup> - but tropical wood fibre coming from forests converted to agriculture is still being used.

In many tropical forests, an incredibly rich vegetation grows on a tiny layer of humus, only a few centimetres deep. When the forest is cleared, the delicate microclimate disappears and the strong tropical rains wash away the humus. On the soil remains just clay or sand, leading the way to desertification. Water resources can also be severely threatened by deforestation, as well as nearby subsistence agriculture.

## 3.2. Impacts of Roads

In order to source timber from natural forests, a company will open new roads to access the previously inaccessible forests and to bring the logs from the cleared forests to the mill. Development of road and forest tracks causes a limited amount of deforestation, but roads also provide entry to others, to previously inaccessible land. Logging, both legal and illegal, and wildlife poaching often follows road expansion. When loggers have harvested an area's valuable timber, they move on. The roads and the logged areas become a magnet for settlers—farmers and ranchers who slash and burn the remaining forest for cropland or cattle pasture, completing the deforestation chain that began with road building<sup>37</sup>. As an example, Roads opened by pulp companies on Sumatra have increased the encroachment of the Tesso Nilo National Park<sup>38</sup> and of the dense natural forests in the Bukit Tigapuluh landscape<sup>39</sup>.

It is thus important to develop roads in a way that social and environmental impacts are prevented

In these countries, high deforestation rates, illegal logging and corruption<sup>35</sup> are a common threat. Peatlands (often the last "unclaimed" large tracts of land in the tropics), have been logged, drained, and converted into pulp plantations, causing huge greenhouse gas emissions of more than 80 tonnes of carbon dioxide per hectare and year<sup>36</sup>.

While major pulp and paper companies in tropical countries have committed to stop conversion of High Conservation Value (HCV) forests and peat lands, as well as to apply FPIC principles, there is a risk that the past model, of using tropical forests for making pulp, will be resumed if pulp mill capacity is increased.

Mitigation measures comprise adapting mill capacity increase to the amount of fibre that is available with a credible, independent, third-party certification employing the most environmentally and socially responsible forest management and restoration practices. No fibres should be sourced from the conversion of High Conservation Values forests nor from High Carbon Stock and Peat areas, regardless of their depth.

and mitigated. In particular for pulpwood harvesting, sound road planning should include control of access where needed.

<sup>34</sup> Eyes on the Forest website (<http://www.eyesontheforest.or.id>) is for example a local NGOs's website monitoring pulp & paper impacts in Indonesia since 2004

<sup>35</sup> Transparency International, Corruption Perceptions Index 2014: Results. See <https://www.transparency.org/cpi2014/results>

<sup>36</sup> J. Jauhainen, A. Hooijer and S. E. Page, Carbon dioxide emissions from an Acacia plantation on peatland in Sumatra, Indonesia, University of Helsinki, 2012. K. M. Carlson, L. K. Goodman and C. C. May-Tobin, Modeling relationships between water table depth and peat soil carbon loss in Southeast Asian plantations. IOP Science, Environmental Research Letters, Volume 10, 7. [iopscience.iop.org/1748-9326/10/7/074006/article](http://iopscience.iop.org/1748-9326/10/7/074006/article)

<sup>37</sup> Earth Observatory, Causes of Deforestation. [earthobservatory.nasa.gov/Features/Deforestation/deforestation\\_update3.php](http://earthobservatory.nasa.gov/Features/Deforestation/deforestation_update3.php)

<sup>38</sup> WWF, Behind the Encroachment in Tesso Nilo Forest, 2006. [www.wwf.or.id/en/news\\_facts/new\\_articles/?4961/behind-the-encroachment-in-tesso-nilo-forest](http://www.wwf.or.id/en/news_facts/new_articles/?4961/behind-the-encroachment-in-tesso-nilo-forest)

<sup>39</sup> WWF, Once-Untouched Haven for Tigers, Orangutans, Elephants Being Systematically Targeted by APP/SMG, 2010. [www.wwf.or.id/en/?21160/Once-Untouched-Haven-for-Tigers-Orangutans-El%20ephants-Being-Systematically-Targeted-by-APPSMG](http://www.wwf.or.id/en/?21160/Once-Untouched-Haven-for-Tigers-Orangutans-El%20ephants-Being-Systematically-Targeted-by-APPSMG)

## 3.3. Impacts of Plantations

New mills, outside of the boreal and temperate forests, are often planned in conjunction with the establishment of pulp plantations. Plantations can become a reason of serious concerns when natural habitats (forest or grasslands) are being converted, local people are losing the access to their land and the water cycle is impacted. Only if they do not compete with other local land uses and if they are established on areas with low environmental and social value, they can play a role in reducing the pressure on natural forests.

Plantation management involves, like in agriculture, soil preparation, fertilisation, herbicide use, clearing of undergrowth, elimination of diseased trees, thinning, elimination of animals which can damage the trees and periodic logging. Most local plant species are removed, and the few species which do manage to survive are periodically eliminated. Epiphytes and climbing plants which support other fauna also tend to disappear. Only a relatively small group of species normally manages to adapt to newly-created environments, and some of them are eliminated because they damage plantation productivity. All these factors cause profound changes in the flora and fauna of local ecosystems<sup>40</sup>.

A further reason for concern is the displacement of traditional forest use: the extraction of fuel wood for cooking and the production of charcoal (a side activity that in some regions can become a major source of income) is already impacting natural forests. The establishment of large scale plantations can displace these activities, making their impacts much more severe and unsustainable if the displacement leads to more use of natural forests.

These risks can be mitigated by ensuring that plantations are established according to sound land-use planning principles, using a mosaic approach, and ensuring that natural ecosystems are maintained and restored around the plantations.

<sup>40</sup> Ricardo Carrere, Pulping The South, 1996. [www.wrm.org.uy/wp-content/uploads/2013/04/Pulping\\_the\\_South.pdf](http://www.wrm.org.uy/wp-content/uploads/2013/04/Pulping_the_South.pdf)

### Impacts of Pesticides and Fertilizers

Being an artificially created and unbalanced environment, heavily dominated by a single species, like in agriculture, industrial plantations of fast growing trees normally require large amounts of pesticides, herbicides and fertilisers which can pollute water and soils and impact the livelihoods of surrounding and downstream communities. Fertilisers, herbicides and pesticides carried by wind or water may have impacts far beyond a plantation area. These chemicals can contaminate the soil, waterways and atmosphere, and affect people, plants and wildlife.

Integrated pest management and minimised use of chemicals are ways to mitigate this potential impact.

### Impacts on the Water Cycle

Depending on the species and the local climate and soil, fast growing pulp wood plantations can use vast amounts of water and have a negative impact on agricultural lands surrounding and downstream of plantation areas. As an example, eucalyptus is, outside Australia, an exotic fast-growing tree, which requires an average of 30 litres of water every day<sup>41</sup>. Plantations are characterised by deep

Protests against pulp mills in Indonesia

Foto: RAN



root systems and tall, dense, evergreen canopies. When planted at a density of 400 trees hectare, a eucalyptus plantation will absorb 12,000 litres per hectare each day. In the surrounding areas, water levels of wells can drop dramatically if the local climate and soil conditions are not appropriate. Other species require less water <sup>42</sup>, however most fast-growing species require high amounts of water and nutrients to keep their pace of growth.

Changes in the water cycle could end up reducing availability of water for other livelihood needs and local agriculture. They can also affect the local climate and increase impacts of droughts. A way to mitigate impacts on water is thus to ensure plantations include clear provisions to preserve or restore the water table, measure water tables and flows in the river basin, and communicate those results publicly.

## Impacts on Soils

The impact of pulp plantations on soil nutrients is mostly dependent on the harvest cycle. The more often the harvest, the larger the amount of nutrients exported, especially if the tree species is very demanding. In natural ecosystems many of the same nutrients are used again and again in a relatively closed cycle, while in plantations, the organic material is removed and nutrients are provided by using fertilizers.

The impacts of plantations are largely dependent on the management method, such as the intensity of chemical pesticides, herbicides and fertilisers, or the use of heavy machinery, and whether leaves, twigs and bark are left in situ during the harvest. Fast growing species such as pine and eucalyptus tend to reduce the action of decomposing agents such as fungi and bacteria, and therefore nutrients contained in the leaf litter are not freed up in a form which would allow them to be taken up easily by roots. The export of nutrients by harvesting, especially on naturally acidic and nutrient poor soils in grassland ecosystems, leads to stronger acidification. Acidification of the soil and the introduction of new chemical compounds make life more difficult for many decomposers. Changes in humidity, temperature and light may have an additional impact <sup>43</sup>. The leaf litter of such pulpwood trees themselves contain tannin, lignin, oils, waxes, and other substances which are difficult to digest or even toxic for soil flora and fauna. Many decom-

posers, not able to adapt, simply disappear. As a result, the leaf litter decomposes very slowly and accumulates on the soil.

Another negative impact on the soils can be related to the use of large harvesting machinery on the site, which modifies the soils physical characteristics and may lead to increased erosion.

Plantations' environmental impact assessments normally include a "soil study" to assess the risks of erosion and the pressure of plantations on peasant agrarian systems. They should also include clear and effective measures to prevent these risks. If plantations are located in less developed areas, new roads need to be opened, as well as forest tracks and firebreaks. Apart from the impacts of these described above, roads and tracks can cause further erosion of the soils.

Ways to mitigate negative impacts when establishing plantations are to use areas with low environmental values, when agreement with local communities has been obtained using FPIC principles (see paragraph on social impacts below).

It is also important to minimise the use of chemicals and the impact of heavy machinery, to ensure adequacy between species and soil and to use the mosaic plantation method to restore natural forests or ecosystems which will act as a buffer.

## Peat Soils

When plantations are established on peat soils they cause a high emission of carbon dioxide, which contributes to climate changes. Furthermore, as the peat soils are drained, the water level drops and the soil subsides, leading to the loss of arable land. On these dried peat lands the risks of peat fires is high, causing further CO<sub>2</sub> emissions. These are so high that half of Indonesia's emissions are resulting from current peatland development and management practices <sup>44</sup>.

<sup>41</sup> Janine M. Albaugh, Peter J. Dye, 2 and John S. King, Eucalyptus and Water Use in South Africa, February 2013. [www.hindawi.com/journals/ijfr/2013/852540/](http://www.hindawi.com/journals/ijfr/2013/852540/)

<sup>42</sup> R. O. Teskey And D. W. Sheriff, Water use by Pinus Radiata trees in a plantation, 1996. [treephys.oxfordjournals.org/content/16/1-2/273.full.pdf](http://treephys.oxfordjournals.org/content/16/1-2/273.full.pdf)

<sup>43</sup> Larry Lohmann, Ricardo Carriere, Pulping the South: Industrial Tree Plantations and the World Paper Economy, 1996. [wrm.org.uy/wp-content/uploads/2013/04/Pulping\\_the\\_South.pdf](http://www.wrm.org.uy/wp-content/uploads/2013/04/Pulping_the_South.pdf)

<sup>44</sup> Wetlands International, Bankers, what are the risks of your peatland investments?, 9 July 2014. [www.wetlands.org/News/tabid/66/ID/3836/BLOG-Bankers-what-are-the-risks-of-your-peatland-investments.aspx](http://www.wetlands.org/News/tabid/66/ID/3836/BLOG-Bankers-what-are-the-risks-of-your-peatland-investments.aspx)

No further expansion of plantations on peat lands should be allowed, regardless of their depth, to prevent further impacts. On existing plantations, good peat management procedures should be implemented. To achieve this, companies should establish a peatland experts working group, with membership, terms of reference and assessment criteria that are acceptable to stakeholders. This group shall provide recommendations for the management and restoration of peatlands.

## Impacts by Genetically Modified Trees

A more recent but not less significant threat are genetically modified trees. Genetically modified eucalyptus for example grows faster, reaching maturity in 5 rather than 7 years, which means they also have higher nutrients and water requirements. Genetically modified trees are controversial as they might have unknown impacts on the environment and health over the long term. To date, credible certifying schemes do not accept genetically modified tree plantations and if non-genetically modified eucalyptus plantations are contaminated, they will lose their certification.

Drainage canal on peat land, West Kalimantan

Foto: RAN





## 3.4. Social Impacts by a Rush to Land

Forestry and industrial tree plantations frequently increase rural poverty. Forests are often crucial to local communities' livelihoods, which are at risk if they are converted to plantations. Community forests, farmland or villagers' rotational agricultural system are often wrongly described as "degraded" by forestry experts and plantation proponents. While this might be true in terms of ecosystems, it does not mean that they are not of value for local communities. If land is converted to tree plantations without Free, Prior and Informed Consent (FPIC) <sup>45</sup> of local communities, they can lose access to water and land essential for their livelihoods and this can undermine the culture and identity of rural people.

The extent of the impacts of a big plantation also depends on the presence of communities and projects competing for land such as biomass, panel and furniture industries or palm oil, soy and cattle ranching industries. If a new plantation is established in a region already over-stretched by land-consuming projects, the impact on biodiversity and local communities will be high.

<sup>45</sup> First Peoples Worldwide, FPIC 101: An Introduction to Free, Prior, and Informed Consent. [firstpeoples.org/wp/fpic-101-an-introduction-to-free-prior-and-informed-consent/](http://firstpeoples.org/wp/fpic-101-an-introduction-to-free-prior-and-informed-consent/)

Chengdu Water Treatment -  
Call hotline if you spot polluted water

Foto: David Jessie



## 3.5. Impacts on Health and Safety

The few jobs that are provided by the plantation and forestry industry can be dangerous, especially in countries where labour rights are poorly applied: mill, plantation and forestry workers there suffer from poor working conditions, can be exposed to hazardous chemicals and often receive little remuneration. According to the UN International Labour Organisation, "forestry continues to be one of the most hazardous industrial sectors in most countries. Around the world, there are often discouraging trends of rising accident rates and a high incidence of occupational diseases and of early retirement among forestry workers." <sup>47</sup>

Forest and plantation management, especially in the peak activity time (planting and harvesting) is often done by sub-contractors where safety and health situation are more problematic than at the main company. Mills can also pose a health and safety risk, not only for the employees but also for the surrounding community, as they emit pollutants.

Furthermore, plantations in emerging economies often have armed security forces who unfortunately can be a real security threat to nearby communities, as a recent death of a community member by security forces in Indonesia shows <sup>48</sup>. Social impacts linked to the logging of forests or the development of irresponsible new plantations with poor consultation and a failure to implement Free, Prior and Informed Consent (FPIC) principles <sup>49</sup>, are:

- Land-grabbing and the use of "unclaimed" forest land that provide essential services to the local community (collection of fruit, herbs, fibre, wood, bushmeat and other resources);
- lack of a land tenure framework and uncertainty about plantation areas;
- destruction of gardens, loss of farmland, pastureland and livelihoods;
- concurrence with food-crops, thereby threatening food security;
- destruction of cultural and ancestral areas;
- relocation of families or entire communities;
- communities that are poorly informed or are made to believe that they will get their land back in a few years;
- water consumption impacts on local agriculture;

- rise of prostitution, AIDS, alcoholism and criminality.

A way to mitigate these potential impacts is to intensively consult with local communities before establishing plantations, applying proper Free, Prior and Informed Consent (FPIC) procedures, ensuring fair hiring wages or fair outgrowers' schemes, respecting labour rights, maintaining ecosystem integrity and stimulating local businesses around the plantations (seedlings suppliers etc.).

Land grabbing, involuntary resettlement or other violations of the rights of indigenous peoples, local communities and workers or violations of the International Labour Organisation's Declaration on Fundamental Principles and Rights at Work <sup>50</sup> shall not be allowed.

<sup>47</sup> The International Labour Organization, Safety and health in forestry work. [www.ilo.org/safework/info/standards-and-instruments/codes/WCMS\\_107793/lang--en/index.htm](http://www.ilo.org/safework/info/standards-and-instruments/codes/WCMS_107793/lang--en/index.htm); [http://www.ilo.org/wcmsp5/groups/public/@ed\\_protect/@protrav/@safework/documents/normativeinstrument/wcms\\_107793.pdf](http://www.ilo.org/wcmsp5/groups/public/@ed_protect/@protrav/@safework/documents/normativeinstrument/wcms_107793.pdf)

<sup>48</sup> Mongabay, Police investigate villager's murder in pulp and paper concession, 02/03/2015. [news.mongabay.com/2015/03/police-investigate-villagers-murder-in-pulp-and-paper-concession/](http://news.mongabay.com/2015/03/police-investigate-villagers-murder-in-pulp-and-paper-concession/)

<sup>49</sup> Forest Peoples Programme, Free, Prior and Informed Consent. [www.firstpeoples.org/guiding-principles/free-prior-and-informed-consent-fpic](http://www.firstpeoples.org/guiding-principles/free-prior-and-informed-consent-fpic)

<sup>50</sup> International Labour Organization, ILO Declaration on Fundamental Principles and Rights at Work, 1998. [www.ilo.org/declaration/lang--en/index.htm](http://www.ilo.org/declaration/lang--en/index.htm)

## 3.6. Impacts of Mills

Apart from plantations and logging, the pulp mills themselves can also have strong impacts on the environment. The pulp and paper manufacturing process uses large amounts of water and energy. Pulp mills generate large amounts of liquid, solid and airborne polluting waste. These may include fossil carbon dioxide and methane, persistent toxic chlorine compounds like dioxins, organic materials that consume oxygen during decomposition, sulphur dioxide which contributes to lake acidification, air-polluting nitrogenous compounds and phosphates that boost algal growth. Some of these chemicals contribute to global climate change, others may affect the health of workers and people living near the mill. They can also impact nearby freshwater and marine ecosystems. While new

process technology has substantially reduced emissions from many mills, there is significant variation around the world and major polluting incidents still occur. In many countries, due to limited ability of the government to monitor and control waste emissions from industrial facilities, it is not unusual that pulp and paper mills ignore maintenance of their waste water treatment facilities and hazardous mill waste ends up being released into the air or dumped in waterways and on nearby lands.

A way to mitigate these impacts is to ensure that the best technology is used, leading to near zero waste, water and air emissions. Investors should, for instance, require that no chlorine and chlorine compounds are used for bleaching.



**Polluted water is a severe problem for those who depend on it.**

Foto: Nasser Nouri

## 4. Reputation and Other Risks Associated with Investments in Pulp and Paper

The pulp and paper sector is not transparent on its impact on forests and only a minority of companies disclose their policies and practices. An assessment by the Forest 500<sup>51</sup> of 250 companies, world-wide, with an impact on forest, showed that 93% of them had no forest policy at all, while a study by supply-change found that of the 114 pulp and timber companies it assessed, only 48 had taken steps to protect HCV areas and that only about half of them were transparent about the progress of their commitments<sup>52</sup>. A WWF report<sup>53</sup> on pulp and paper companies assessed in Singapore, Malaysia and Indonesia, showed that only 26% of companies disclose their due diligence system to ensure the legality of their supply base, even though this is required by major markets such as the EU, US and Australia. Less than 25% of companies disclosed their practices regarding other key environmental, social or governance issues such as planting on priority areas, local and indigenous communities and labour practices.

This poor disclosure does not fit well in the context of stricter sustainability commitments by large buyers of timber and pulp and paper products. Unsustainable practices can result in the loss of end customer contracts, the inability to meet market access regulations and being closed off trader routes to market, in addition to operational stoppages and other supply disruptions, fines, loss of operating licenses, loss of supporting ecosystem services and negative impacts of climate change such as lower yields, crop damage etc. The additional spectre of reputational damage is also to be considered given its potential to result in customer boycotts.

These negative commercial implications present significant financial and reputational risks to banks and investors who finance pulp and paper companies. Many banks continue to finance forest risk commodity sectors without adequate risk management policies nor due diligence procedures. This way they miss out on the benefits of integrating

Environmental, Social and Governance (ESG) criteria in their business activities, which would enhance credit risk management, deepen client relationships, reduce reputational risks and provide the opportunity to offer new products.

For investors, the failure to adopt Environmental, Social and Governance criteria and the lack of direct engagement with plantation companies, as well as the banks that lend to them, results in suboptimal returns, higher volatility and exposure to systemic risks. Systemic risks include climate change (to which deforestation and land use conversion contribute by emitting greenhouse gases), which may impact other investments of the bank.

<sup>51</sup> Global Canopy Programme, Forest 500. [forest500.org/](http://forest500.org/)

<sup>52</sup> Supply Change, Timber and Pulp. [supply-change.org/commodity/timber\\_and\\_pulp](http://supply-change.org/commodity/timber_and_pulp)

<sup>53</sup> WWF, Sustainable finance in Singapore, Indonesia and Malaysia: a Review of Financiers' ESG Practices, Disclosure Standards and Regulations, 2015. [d2ouvy59p0dg6k.cloudfront.net/downloads/wwf\\_frc\\_forest\\_risk\\_commodities\\_report\\_2015\\_online\\_1.pdf](https://d2ouvy59p0dg6k.cloudfront.net/downloads/wwf_frc_forest_risk_commodities_report_2015_online_1.pdf).

## 5. Recommendations

Paper production and use has significant social, environmental and human rights implications. The challenge for the global paper industry, retailers, governments, investors, consumers and civil society is to change wasteful paper consumption patterns, ensure fair access to paper and reduce the industry's impacts on biodiversity, forest health, global warming, air and water quality and human rights. There is an urgent need for action to transform

paper production, trade and use to fully contribute to a society based on renewables, and each company, government, financial institution, organisation and individual plays a unique and complementary role in moving the paper industry towards social and environmental sustainability. Further expansion or development of this industry should only take place if all the recommendations listed below are met.

### 5.1. Pulp and Paper Companies

All new pulp projects should be subject to a full cost-benefit analysis by credible and independent institutions. This should allow companies to identify negative and positive impacts and the real costs of the project (including all previously hidden costs). For existing projects and plants, a full cost-benefit analysis will help identify negative impacts on people and the environment in order to eliminate them (or to mitigate and compensate them if it is too late).

Companies should eliminate all fibre and suppliers linked to deforestation, forest degradation, illegal logging, violations of local people's rights or plantations developed by converting natural forests. In particular, companies should not engage in:

- plantations developed by converting natural forests;
- degradation or loss of endangered<sup>54</sup> or High Conservation Value (HCV) forests ecosystems and habitats<sup>55</sup>;
- degradation or loss of High Carbon Stock (HCS) forests;
- degradation or loss of tropical peatlands of any depth;
- use of raw material from unknown sources;
- the use of fire for forest clearance;
- the introduction of invasive species;
- illegal activities, whether under local, national or international law;
- activities for which FPIC has not been obtained from affected people;
- land grabbing;

- involuntary resettlement or other violations of the rights of indigenous peoples, local communities and workers;
- violation of the International Labour Organisation's Declaration on Fundamental Principles and Rights at Work<sup>56</sup>;
- activities that are a threat to endangered species;
- the use of dangerous toxic substances;
- the use of genetically modified organisms;
- corruption and tax evasion;
- sourcing from companies that are involved of any of the above activities.

The above should apply to the entire corporate structure, including all subsidiary and parent organisations.

For other impacts, companies should have a clear compensation and mitigation plan, approved by all affected communities, and a fair resolution process to be established for existing conflicts. Companies should be actively engaged with stakeholders, providing them timely with relevant information, in a culturally appropriate way, and they should contribute to local sustainable development.

Companies should adhere to the UN Global Compact, which requires them to respect and uphold the Universal Declaration of Human Rights<sup>57</sup>, the UN Guiding Principles on Business and Human Rights<sup>58</sup> and the UN Declaration on the Rights of Indigenous Peoples<sup>59</sup>. Free, Prior and Informed Consent (FPIC) has to be obtained from

all affected communities and forest-dependent peoples as a precondition for every new project.

Companies should be able to prove that they have access to a large enough land bank of plantations or managed forests to feed their pulp mill during its entire lifespan (responsibly obtained, as described below). Plantations should be established in a way that will restore social and ecosystem services at the landscape level.

Companies should develop and manage plantations in the most environmentally sound way, providing protection or restoration to natural forests, adequately managing soil and water nutrients, water level and quality and air pollution. The company should have a pest management plan that will focus on the use of biological pest control methods and reduce the use of chemical pest control to a minimum.

Companies should play an active role in the research and development of commercial scale production of paper products from responsibly sourced alternative fibre sources, including fibre made from recycled materials, recovered fabrics and agricultural residues. They should give preference to projects that contribute to a reduction in the consumption of virgin fibres, a reduction in overall resource use and an increase to the fair access of paper.

Companies should source any virgin wood fibre for paper from forest and plantations that have credible, independent, third-party certification for employing the most environmentally and socially responsible forest management and restoration practices. The Forest Stewardship Council (FSC) is currently the only international certification programme that comes closest to meeting this goal.

Companies should implement the cleanest technology available in new mills, aiming to reach the target of zero emissions to air and water and minimising landfilling and water consumption. Companies should also upgrade old technologies in existing mills.

Companies should measure, report and reduce the company's carbon footprint related to land use, forest/plantation management as well as the company's direct carbon footprint related to its operations. They should change from fossil fuels and other high emission energy sources, including from unsustainable biomass, to responsibly-produced low-emission biomass and other renewable energy sources.

Companies should have a plan for the decommissioning of a mill at the end of its lifetime, and ensure that the forests/plantations they owned or sourced from continue to be well managed and/or restored.

<sup>54</sup> Some forests are so rare, threatened or ecologically vulnerable, or are of such global biological or cultural importance that any logging or commercial use could irreparably damage their conservation value. See 'Wye River' discussion document for additional details, Ecological Components of Endangered Forests. [www.greenpeace.org/usa/Global/usa/report/2010/2/endangered-forests-technical-d.pdf](http://www.greenpeace.org/usa/Global/usa/report/2010/2/endangered-forests-technical-d.pdf).

<sup>55</sup> As defined by the FSC and High Conservation Value Resource Network, High Conservation Value (HCV) areas contain particularly important conservation values including rare, threatened and endangered species and their habitat and areas with cultural or livelihood significance for local communities. [www.hcvnetwork.org](http://www.hcvnetwork.org)

<sup>56</sup> International Labour Organization, ILO Declaration on Fundamental Principles and Rights at Work, 1998. [www.ilo.org/declaration/lang-en/index.htm](http://www.ilo.org/declaration/lang-en/index.htm)

<sup>57</sup> United Nations, Universal Declaration of Human Rights, 1948. [www.ohchr.org/EN/UDHR/Pages/Introduction.aspx](http://www.ohchr.org/EN/UDHR/Pages/Introduction.aspx)

<sup>58</sup> United Nations, Guiding principles on Business and Human Rights, 2011. [www.ohchr.org/Documents/Publications/GuidingPrinciplesBusinessHR\\_EN.pdf](http://www.ohchr.org/Documents/Publications/GuidingPrinciplesBusinessHR_EN.pdf)

<sup>59</sup> United Nations, Declaration on the Rights of Indigenous Peoples, 2007. [www.un.org/esa/socdev/unpfii/documents/DRIPS\\_en.pdf](http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf)

Good to know where the timber comes from

Foto: ARA



## 5.2. Governments and Public Authorities

Governments should develop legislative, fiscal and operational measures to increase the purchasing of more sustainable products by reforming forest governance and securing improved forestry practices, encouraging only responsible investment in industry.

Governments should regulate the production process of timber and pulp and paper, in order to internalise all the social and environmental costs, from "cradle to grave", including all material production costs as well as future or deferred costs. The actual cost of timber and timber products, as well as non-renewable products, should be higher than at present, where mill production costs are often effectively subsidised by underpaid workers, impoverished local communities and loss of biodiversity and ecosystem functions. However this will mean that the retail prices of products, especially paper, will be much more realistic, which will lead to a reduction of wasteful consumption and help to avoid the externalisation of social and ecological costs.

National and local governments are responsible for land-use planning: they should ensure effective strategies for avoiding deforestation and maintaining/restoring ecosystem services, by planning and licensing to improve sustainable local development and the well-being of local communities. These, together with creating economic alternatives to destroying the forests, are key factors for protecting biodiversity and climate. Governments should establish a clear land tenure framework, ensuring that traditional land ownership and land use rights are fully respected. Strong policies are needed to maximise separate waste collection and segregation, promoting reuse and recycling. Public authorities should also set incentives for production and use of recycled fibre and other responsibly produced products.

Public authorities should implement strong rules for public procurement and purchasing guidance in order to give incentives to reduce wasteful consumption and promote the use of recycled or FSC certified paper and paper recovery.

## 5.3. Banks and other Financial Institutions

Banks and other financial institutions should develop and adopt investment policies which ensure that their lending and investments in the pulp and paper sector do not cause further deforestation or lead to disputes with indigenous peoples and local communities, particularly in relation to land access, use and ownership claims. Such policies should cover all services, including lending, asset management and advisory services. These policies should also make sure that investment only take place in companies that comply with the requirements mentioned above in the "Pulp and paper companies" paragraph.

To implement these policies, financial institutions should develop and implement effective environmental and social due diligence procedures. Covenants should be included in contracts with clients, binding the client to comply with the bank's sustainability requirements.

## 5.4. Consumers

Paper and packaging users can also contribute to the safeguarding of forests. Consumers - individuals, corporate or governments - need to use paper wisely and efficiently, and reduce consumption in "paper rich" countries. Its re-use, especially for packaging also reduces the need for paper production growth.

Paper can be recycled 5 to 7 times, thereby reducing global warming, pressure on forests, water

and energy use and increasing the amount of usable materials diverted from incinerators and landfills.

Consumers can help drive the market towards better paper production by using recycled products. As virgin fibre will always be needed to complement recycled fibre, consumers should preferably use paper which has virgin fibres from agricultural residues or that are certified by FSC.

**Promote production of recycled paper**

Foto: ARA



## 6. A 'Global Paper Vision'

Paper is a renewable and useful product. However, its production process can in some cases cause high social and environmental impacts, which include the loss of endangered habitats, a loss of biodiversity, people losing their land and their livelihoods, pollution and health and safety risks.

Based on the assumption that both population and demand for paper will grow, paper production and consumption might also rise dramatically over the next decades, which means the impacts of the pulp and paper sector could increase sharply. Investors and companies should only invest in, and implement new mills and plantations in a social and environmental sound way, following the recommendations from this document and the guidance of the Global Paper Vision.

To develop collaboration and dialogue between the paper industry and civil society, 140 organisations have formed the global Environmental Paper Network (EPN). We share a 'Global Paper Vision' which includes recommendations for how paper can be sustainably produced and consumed. The Global Paper Vision identifies seven common goals that are key objectives for change:

- Reduce Global Paper Consumption and Promote Fair Access to Paper
- Maximise Recycled Fibre Content
- Ensure Social Responsibility
- Source Fibre Responsibly
- Reduce Greenhouse Gas Emissions
- Ensure Clean Production
- Ensure Transparency and Integrity

### **An opportunity to transition to the Global Paper Vision**

The pulp and paper industry should strive to achieve the goal of the EPN Global Paper Vision, signed by 140 NGOs worldwide:

"We seek the successful transition to pulp and paper that is part of the solution to climate change and is made from responsibly sourced fibres, using entirely low-carbon, renewable energy, with water that is as clean after paper production as before, producing zero waste and zero emissions. »

Download the Global Paper Vision at: [environmentalpaper.org/vision/](http://environmentalpaper.org/vision/)



**European Environmental  
Paper Network**

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