INTERNATIONAL COUNCIL OF FOREST & PAPER ASSOCIATIONS

2013

ICFPA Sustainability Progress Report

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1. Executive Summary

The International Council of Forest and Paper Associations (ICFPA) serves as a forum of global dialogue, coordination and cooperation among forest and paper associations. The 2013 ICFPA Sustainability Progress Report is the fourth biennial report that highlights the progress of national and regional member associations in acting on the 2006 CEO Leadership Statement commitments.

This year, the focus of the report is on the industry's contribution to the green economy. The report describes how the forest and paper industries are supporting the transition to a green economy through five main areas: resource efficiency, bio-based products, innovative technologies, carbon sequestration and benefitting communities. Member case studies throughout the report highlight progress towards the green economy on national and regional levels.

Globally, the sustainability performance of the forest and paper industries is improving. This Progress Report provides a global snapshot on five performance indicators related to four of the CEO Leadership Statement commitments. Performance has improved on all five indicators from the baseline year, including a 16% decrease in greenhouse gas (GHG) intensity and a 38% increase in Sustainable Forest Management (SFM) certified hectares.

This report includes members' progress on each of the commitments made in the CEO Leadership Statement.

Global aggregate sustainability performance indicators included in the report:

- GHG Intensity
- Share of Bio-Energy in Fuel Mix (NEW)
- SFM Certified Hectares
- Global Recycling Rates
- SO_2 Emissions (NEW)

Commitment	Summary of Progress
Creating Solutions to Global Climate Change and Energy Supply Challenges	ICFPA members are addressing climate change through a variety of policies and market-based incentives. The majority of reporting ICFPA members have made commitments to reduce emissions and increase the use of renewables in the energy mix. A number of members are engaging in emissions trading and carbon offset schemes to reduce emissions and encourage tree planting. Forests and forest products are increasingly being recognized in the marketplace as important contributors to climate mitigation for their ability to sequester and store carbon, and as a viable substitute for more carbon-intensive alternatives.
Promoting Sustainable Forest Management (SFM) Worlwide	The long-term health of forest eco-systems and the maintenance of a sustainable supply of fibre are critical concerns for ICFPA members. Members have continued to increase the total area of certified sustainably managed forests through global SFM certification systems such as the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC). While the uptake of SFM from reporting ICFPA members has remained steady (50% of reporting members' forests were SFM certified in 2011 compared to 51% in 2009), SFM certification is still rising globally with growth occurring in regions where SFM certification was previously low.

Commitment	Summary of Progress
Combating Illegal Logging	ICFPA members oppose the practice of illegal logging, as it distorts trade, destroys wildlife and damages communities. At least four reporting members have supported legislation in the past two years to combat the issue of trade in illegally harvested timber. Several countries have set up monitoring and traceability systems to verify the origins and legality of fibre.
Fibre Use and Recovery	Recovering fibre and integrating it back into product manufacturing reduces the demand for raw wood materials. ICFPA members encourage paper recycling and global recycling rates have risen 10 percentage-points from 2000 to 2011. Five members have achieved recycling rates of over 60%. Members' investments in innovation are leading to new bio-based products which are considered alternatives to petroleum-based products.
Environmental Management	ICFPA members are committed to improving environmental practices and performance through the application of environmental management systems. Members continue to show progress on environmental indicators such as: water use, energy use, releases of chemical substances, sulfur dioxide emissions (SO_2), biological oxygen demand (BOD), chemical oxygen demand (COD) and waste. Four members, representing 228 million tonnes of production in 2011 (or 57% of global production), reported on the air emissions aggregate indicator, demonstrating a 34% decrease in SO_2 emissions from the 2005 baseline year.
Investing in Workers and Communities	The forest products industry plays an important role in supporting local communities and local economies. Since the previous report, several reporting ICFPA members have carried out training and capacity building programs, increased their efforts to hire local suppliers, and developed partnerships to campaign for improved health and safety and to support community needs. Health and safety are of critical importance to the industry and at least four reporting members (CORMA, FPAC, AF&PA, and CEPI) have shown improvements in accident rates since the previous report.

The ICFPA Sustainability Progress Report supports transparency and helps drive continuous improvement in the forest products industry. The organisation is committed to biennial reporting and the use of aggregate indicators to track global performance of the sector. Please contact the ICFPA if you have any questions or comments on the report at info@icfpa.org.

2. About ICFPA

The International Council of Forest and Paper Associations (ICFPA) is an organisation of national and regional forest and paper industry associations, whose purpose is to:

- Serve as a forum of global dialogue, coordination and cooperation among forest and paper associations
- Represent the global forest and paper industry in international organisations
- Develop common positions on issues of mutual interest
- Coordinate action by member associations

ICFPA in numbers:

- **38** forest and paper associations united under the ICFPA
- **36** countries involved
- **87**% of the world's paper production represented
- **60**% of the world's wood production represented

3. About this Sustainability Progress Report

ICFPA and its members have made a strong and clear commitment to sustainable development and to working with other stakeholders to ensure that environmental, social and economic benefits of forest resources are available to current and future generations.

Since the signing of the historic CEO Leadership Statement on Sustainability in 2006, ICFPA has published a biennial report on its members' progress and performance in six areas:

1. **Creating solutions to global climate change and energy supply challenges**
2. **Promoting sustainable forest management worldwide**
3. **Combatting illegal logging**
4. **Fibre use and recovery**
5. **Environmental management**
6. **Investing in workers and community**

To view the CEO Leadership Statement, visit the ICFPA website at: **www.icfpa.org/resource-centre/statements**

Country/Region	Association	Acronym
Australia	Australian Forest Products Association[1]	AFPA
Brazil	Brazilian Pulp and Paper Association	BRACELPA
Canada	Forest Products Association of Canada	FPAC
Chile	Corporación Chilena de la Madera	CORMA
China	China Paper Association	CPA
Europe	Confederation of European Paper Industries [2]	CEPI
India	Indian Paper Manufacturers Association	IPMA
Japan	Japan Paper Association	JPA
Lebanon	Syndicate of the Owners of Paper and Packaging Industries in Lebanon	SOPIL
Malaysia	Malaysia Pulp and Paper Manufacturers Association	MPPMA
New Zealand	New Zealand Forest Owners' Association	NZFOA
Russia	The Russian Association of Pulp & Paper Organizations and Enterprises	RAO BUMPROM
South Africa	Paper Manufacturers Association of South Africa	PAMSA
United States	American Forest & Paper Association	AF&PA

[1] In 2011, the National Association of Forest Industries and the Australian Plantation Products and Paper Industry Council (A3P) merged to form the Australian Forest Products Association (AFPA)

[2] Representing 18 National Pulp and Paper Associations from the following countries: Austria, Belgium, Czech Republic, Finland, France, Germany, Hungary, Italy, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, United Kingdom

Now in its fourth publication, the 2013 ICFPA Sustainability Progress Report (Progress Report) continues to report on members' progress towards the six commitments (Section 6) outlined in the CEO Leadership Statement, and highlights international trends in these areas through aggregated performance indicators (Section 5). Two new aggregated performance indicators have been added to this 2013 Progress Report. Also new to this report is the focus on how the industry is contributing to the green economy. The industry's role in the green economy is explored in detail in Section 4 and case studies can be found throughout the report.

The ICFPA is pleased to welcome first-time reporting members, China, India and Malaysia to the list of ICFPA members contributing to this 2013 Progress Update.

To advise and steer the development of this report, ICFPA established a Sustainability Reporting Working Group made up of members from AF&PA, BRACELPA, CEPI, FPAC, JPA and PAMSA. ICFPA would like to thank these members for their input and contributions to this report.

4. Contributing to the Green Economy

The global forest products industry has a critical role to play in the transformation towards the green economy. The global forest products sector makes important contributions to the green economy through:

RE	**Resource Efficiency**	Using material and energy inputs efficiently through recycling and the use of waste and by-products
BP	**Bio-based Products**	Delivering products from renewable, biological resources
IT	**Innovative Technologies**	Developing new and improved technologies and products that enable industry transformation and market opportunities and meet the needs of consumers
CS	**Carbon Sequestration**	Storing carbon in forests and forest and paper products
BC	**Benefitting Communities**	Bringing economic and health benefits to and improving the well-being of rural economies and communities

Look throughout this report for case studies that demonstrate how ICFPA members are helping to build the green economy. The icons at left provide an easy indicator of how the case study relates to the green economy.

"The global forest products industry is at the forefront of forest conservation efforts. Through sustainable forest management practices, our industry not only produces a sustained annual yield of timber, but also ensures its abundance for future generations. The global forest products industry also contributes to livelihoods and human well-being by employing millions of people around the world and by producing products that provide shelter and increase literacy. The emerging bio-economy can only increase the important role of this industry."

- Donna Harman, President of ICFPA

"In the long term, a sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber, fibre or energy from the forest, will generate the largest sustained [climate] mitigation benefit."

- IPCC 4th Assessment Report

National and Regional Programmes to Support the Green Economy

Several ICFPA members are developing innovative programmes and long-term strategies to help the forest product industry transition towards the green economy. These include:

- CEPI's 2050 Roadmap to the Bio-economy www.unfoldthefuture.eu
- FPAC's Bio-Pathways Partnership Network www.fpac.ca/bio-pathways
- AF&PA's *Better Practices, Better Planet 2020* www.afandpa.org/sustainability

5. Measuring our Impact

This report provides information and data on the global forest product industry's collective impact and performance through a number of sustainability performance indicators. These indicators are aggregated across member associations to provide an international snapshot of the sustainability of the industry, enabling stakeholders to evaluate and track global performance.

ICFPA continues to enhance its approach to sustainability reporting. Building on the three aggregate performance indicators included in the 2011 Progress Report, two additional indicators have been developed for this report. These two new indicators – the share of bio-energy in the fuel mix and SO_2 emissions – expand ICFPA's ability to measure and track performance, providing coverage across four of the six Leadership Commitments. As reporting coverage from member associations increases and a strong baseline is established, the ICFPA will look to develop and include additional performance indicators in future reports.

Indicator data was collected through a survey distributed to all members of ICFPA. The baseline years for data and reporting years vary by member and are included in Table 1. This variation is due to differences in reporting cycles and data availability. Only

Table 1: Summary of Progress on Global Sustainability Indicators

Relevant Commitment	Global Indicator	Metric	Baseline Year	Reporting Year	Change
Creating solutions to global climate change and energy supply challenges	GHG Intensity	mt CO_2eq/mt production (Scope 1 + 2 combined)	0.7 2004/05	0.6 2010/11	**-16%**
	Share of Bio-Energy in Fuel Mix (NEW in 2013)	% of onsite energy needs met by biomass and renewable fuel sources	53% 2004/05	58% 2010/11	**+5** percentage points
Promoting sustainable forest management worldwide	SFM Certified Hectares	% SFM certified hectares	12% 2000	50% 2011	**+38** percentage points
Fibre use and recovery	Global Recycling Rates	% of recovered paper used by paper and paperboard mills from total paper and paperboard production	46% 2000	56% 2011	**+10** percentage points
Environmental management	SO_2 Emissions (NEW in 2013)	kg SO_2/mt production	2.0 2004/05/06	1.3 2010 / 2011	**-34%**

data from associations providing complete responses for a given performance indicator have been included in the aggregate indicators presented in Table 1.

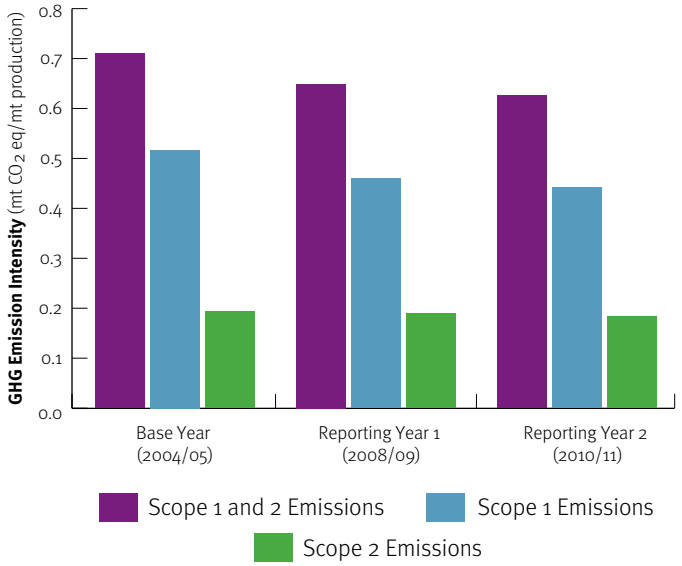
5.1 Climate Change (GHG Intensity)

The global forest product industry plays a central role in the fight against climate change. The industry's contributions include: maintaining carbon stocks through sustainable forest management, developing bio-based products, providing energy from renewable sources, and reducing the industry's carbon footprint.

Six ICFPA members, accounting for 267 million tonnes of production, submitted Scope 1 (onsite fuel combustion) and Scope 2 (total purchased minus sold electricity) GHG emissions data for this report. Figure 1 shows the change in Scope 1 and combined (Scope 1 + 2) emissions for the baseline year and the two reporting years. [3]

There has been a 16% reduction in Scope 1 GHG emission intensity, and a 16% reduction in the combined, Scope 1 + Scope 2 GHG emission intensity between the baseline and most recent reporting years. The decrease in emission intensity is a result of switching from fossil fuels to biomass fuels, process improvements leading to energy efficiencies at facilities, and actions related to policy developments.

Figure 1: ICFPA Reporting Member GHG Emissions
(CEPI, AF&PA, FPAC, JPA, PAMSA and BRACELPA)



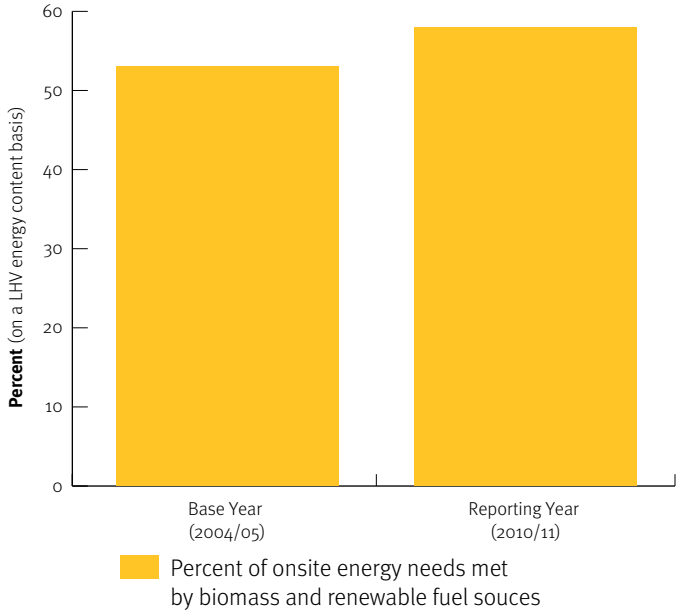
5.2 Bio-Energy (Share of Bio-Energy in Fuel Mix)

The global forest product industry is reducing its reliance on fossil fuels by increasing the share of bio-energy in the fuel mix. Bio-fuels include: spent pulping liquor, bark, wood, wood scraps, wood by-products, process residuals, and other renewable fuels including onsite hydro-electric power.

Six ICFPA member associations, representing 241 million tonnes of production in the baseline year and 221 million tonnes in the reporting year, submitted energy data for the percent of onsite energy needs that are derived from biomass and other renewable fuels.

Figure 2 shows the increasing percentage of onsite energy needs derived from biomass and other renewable fuels. **The share of biomass and other renewable fuels has increased nearly 5 percentage**

Figure 2: ICFPA Reporting Member Share of Bio-Energy in Fuel Mix (CEPI, AF&PA, FPAC, JPA, PAMSA and BRACELPA)



[3] Historical data availability varies between members. In these instances we have taken a conservative approach and rectroactively applied the most recent data into the calculation of the baseline year.

points from 53% to 58% from the baseline to the reporting year. This increase is driven primarily by the reduction in the use of energy from fossil fuel sources and by the reduction in purchased electricity and steam.

5.3 Sustainable Forest Management
(SFM Certified Hectares)

Sustainable forest management is about striking a balance between society's increasing demand for forest products, and stewardship of healthy forests that support biodiversity, sustainable eco-systems, and healthy communities. The sustainable procurement indicator presented in this report describes the percent of forest-based wood fibre supplied from certified sustainably managed forest sources. For the purpose of this report, certified sustainably managed forest is defined as wood that has been certified to a system formally recognized by the Forest Stewardship Council (FSC) and/or the Programme for the Endorsement of Forest Certification schemes (PEFC).

In 2011, certification levels remained steady, with 50% of the wood supply of eight reporting ICFPA members supplied from certified sustainably managed forests. While largely unchanged since the previous report, **the uptake of SFM has increased dramatically since 2000** when only 12% of wood supplied came from SFM sources. Two additional members were included this year, New Zealand and South Africa, increasing the total area certified to 285 million ha, an increase of 12 million ha from the previous Progress Report. Expansion in SFM certification is challenging due to limited availability of certified raw material from small non-industrial private forest owners. A large part of forests in the United States, Europe and other regions are owned by small private forest owners, and while SFM is often practiced, SFM certification is seen as a costly barrier that is not practical to implement for small-scale owners.

Table 2: ICFPA Reporting Member Percent of SFM Certified Forest
(AF&PA, BRACELPA, CEPI, CORMA, FPAC, JPA, NZFOA and PAMSA)

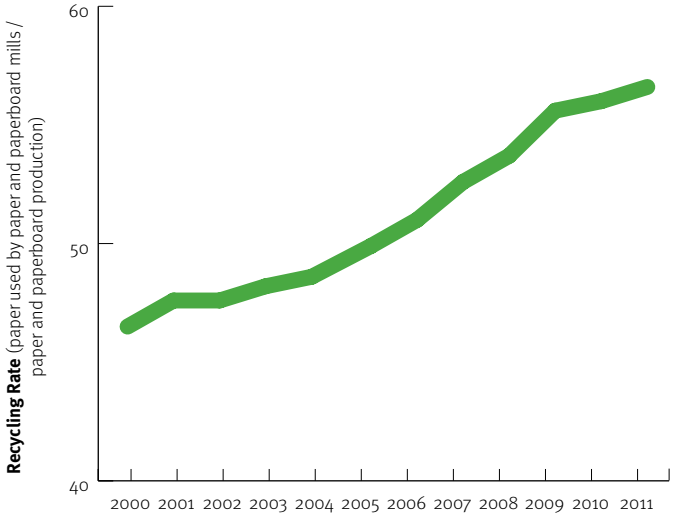
Year	Total Area Used to Supply Industry (millions of hectares)	Total SFM-Certified Area Used to Supply Industry (millions of hectares)	Percent SFM Certified
2000	543.21	64.52	12%
2009	545.03	276.61	51%
2011	567.23	284.84	50%

5.4 Paper Recycling (Global Recycling Rate)

Paper is one of the most recycled products in the world. Using recycled paper as a raw material in the papermaking process helps the industry extend its fibre supply and saves landfill space.

For the purpose of this report, the Global Recycling Rate is the amount of recovered paper used to produce paper globally as a percent of global paper and paperboard consumption. Instead of data submissions from ICFPA members, the data for this indicator is derived from RISI's Annual Review of Global Pulp and Paper Statistics, which provides two years of data on recovered paper usage and trade for 175 countries worldwide.

Figure 3: Global Paper Recycling Rates
(SOURCE: RISI's Annual Review of Global Pulp and Paper Statistics)



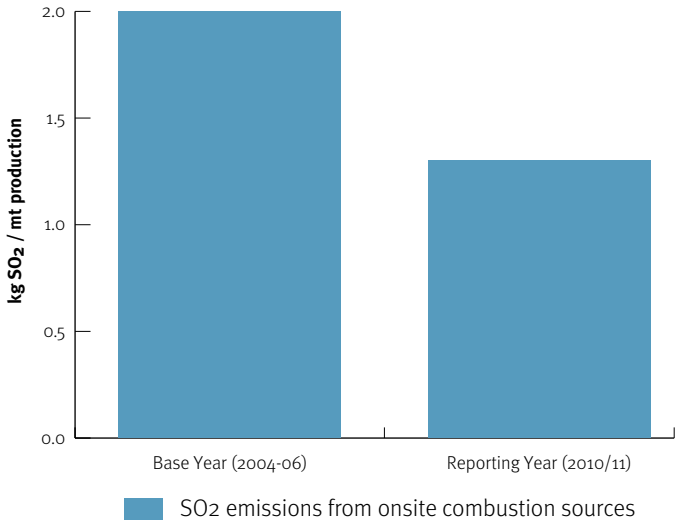
NOTE: The recovered paper usage data are derived from the Annual Review of Global Pulp and Paper Statistics, which provides two years of data on production, imports, exports and apparent consumption of paper but also recovered paper usage and trade for 175 countries worldwide. The sources used are national pulp & paper producers associations and RISI mill database.

As shown in Figure 3, **since 2000, the global recycling rate has increased 10 percentage points, from 46% to 56%.** As described in the Fibre Use and Recovery section of this report, several members are achieving or are committed to achieving paper recycling rates above 70%. A steady demand for recycled products, public engagement to encourage paper recycling, and promoting and developing new grades of recycled paper through enhanced research and development are all drivers for improving the global paper recycling rate. There are further gains to be made from improving the recycling rates in emerging and developing economies.

5.5 Air Emissions (SO_2 Emissions)

Sulfur dioxide (SO_2) is emitted during the paper manufacturing process and is a major contributor to acid rain. Four ICFPA member associations representing 254 million tonnes of production in the baseline year and 228 million tonnes in the reporting year submitted sulfur dioxide emission data for this report. Figure 4 shows that **sulfur dioxide emission intensity from onsite combustion sources in the reporting year has decreased 34%** from the baseline year.[4] Factors that may have contributed to the decline in SO_2 emissions intensity over time include the reduction in usage of high sulfur content fuels such as coal and fuel oil, and the increased prevalence of SO_2 removal systems on boilers.

Figure 4: ICFPA Reporting Member Sulfur Dioxide Emissions
(AF&PA, FPAC, CEPI and JPA)



[4] Other forms of gaseous sulfur emissions such as total reduced sulfur compounds, sulfuric acid, and sulfur trioxide are not considered in this indicator.

6. Progress on Our Commitments

6.1 Creating Solutions to Global Climate Change and Energy Supply Challenges

"The global forest products industry is strongly committed to meeting the challenges of climate change. Trees, wood and paper products are uniquely renewable and recyclable resources that help reduce greenhouse gases by storing CO_2 from the atmosphere...."

— Excerpt from the ICFPA CEO Leadership Statement

6.1.1 Australia (AFPA)

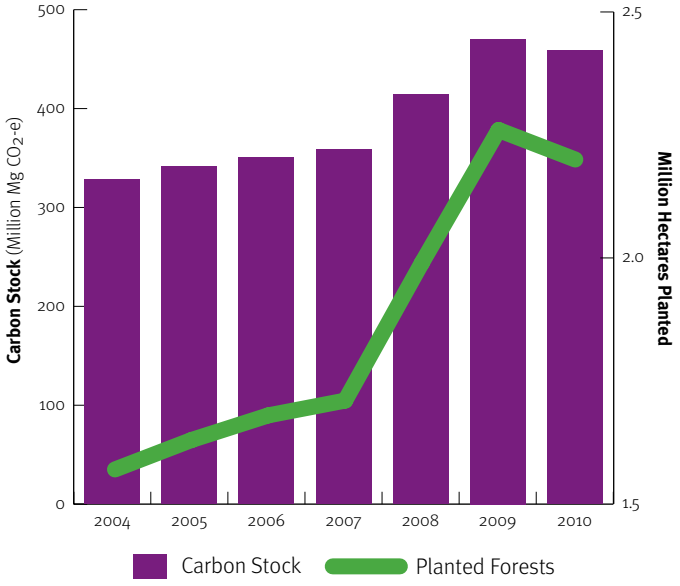
AFPA provided input into the development of Australia's bioenergy policies including the Renewable Energy Target (RET), which mandates that 20% of Australia's electricity supply will come from renewable sources by 2020. It is estimated that with the right policy, existing wood waste could provide up to 3000 GWh of renewable energy by 2020, or 7% of the RET target. The industry is committed to supporting the achievement of the RET through an increased proportion of renewable bioenergy production and the use of less carbon intensive energy. A number of firms have specifically committed to make reductions in emissions of 20% by 2020 on 2005 levels.

AFPA supports the Carbon Farming Initiative, a national carbon offsets scheme that allows farmers and land managers to earn carbon credits in two ways: by either storing carbon in growing forests or harvested wood products; or by reducing greenhouse gas emissions on the land. AFPA is working to improve the design of such schemes to facilitate new and ongoing investment by the industry in forestry carbon offset activities.

6.1.2 Brazil (BRACELPA)

When it comes to energy mix, the Brazilian pulp and paper sector has made significant progress in the transition to a low carbon economy. From 1980 to 2010, fuel oil consumption dropped from 48% of the sector's energy mix (excluding the consumption of electrical energy) to only 5.5%, while renewable sources, such as biomass and black liquor, increased from 48% to 84.8%. The use of natural gas instead of fuel oil has increased to 8% of the energy mix. Most significantly, the sector has enabled sustainable amounts of net GHG removals over the past decade, approximately 163 $MtCO_2$-e, by increasing its planted forests stocks from 1.4 million ha in 2000 to 2.2 million in 2010, as shown in Figure 5. In

Figure 5: BRACELPA Hectares of Planted Forest and Associated Carbon Stock



AUSTRALIA: Adapting to a Changing Climate

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Future weather predictions in Australia include hotter and drier conditions, extended droughts, and more severe weather events such as cyclones and bushfires. In 2012, AFPA completed a three year project promoting industry awareness and capacity building for dealing with the risks of climate change. The project involved a review of the latest state of knowledge with respect to projected climate scenarios, possible impacts on forest regions, management options, risk planning, and a series of workshops and resources to help industry adapt to climate change. For more information, visit: http://www.ausfpa.com.au/site/projects.php

BRAZIL: Forests as Sustainable Carbon Sinks

BRACELPA launched Brazil's Sustainable Forests Initiative in association with private sector organisations and several civil society partners, including Conservation International, the Ethos Institute, WWF-Brazil and The Nature Conservancy. The initiative contributes to climate change mitigation and the promotion of sustainable territorial development through the establishment of additional forest production and conservation systems in Brazil.

addition, large amounts of carbon stocks are maintained in the sector's conservation areas, which amount to approximately 2.9 million hectares with native vegetation cover.

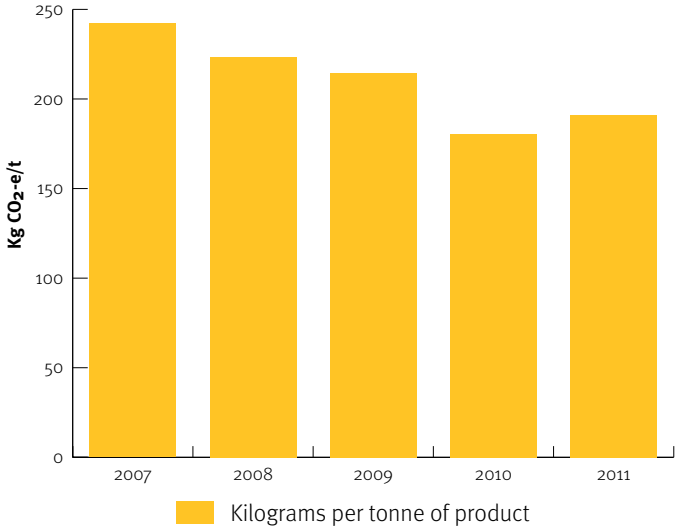
However, expanding forest stocks remains a major challenge in Brazil given barriers such as a lack of a structured wood market and the high up-front capital costs. Based on additional policies and incentives under development, the sector aims to double its forest area within the next decade, including the generation of substantive amounts of additional net GHG removals, through production and conservation systems.

6.1.3 Canada (FPAC)

The Canadian forest products industry has pledged to be carbon neutral industry-wide by 2015, without the purchase of offset credits. This is a collective industry commitment that goes beyond the scope of individual companies. Progress continues – activities include self-generating electricity from biomass, thus reducing the use of more carbon intensive energy sources; planting fast growing poplar trees to sequester carbon; and working with the transportation supply chains. Some companies are now net exporters of energy to the electricity grid.

Between 2007 and 2011, the Canadian forest products industry reduced its GHG emissions on an intensity basis by 21%, as shown in Figure 6. This was primarily driven by fuel switching from fossil fuels to renewable biomass energy and hydro-electricity. The result is the elimination of the use of coal and a reduction in the use of oil by 91%.

Figure 6: FPAC GHG Emissions Intensity



Between 2005 and 2011, the Canadian industry was able to reduce energy use by 32%. This was facilitated in large part by the Pulp and Paper Green Transformation Program, introduced by the Canadian government in June 2009, which tied capital investment aimed at improving environmental performance with increased competitiveness as part of industry transformation.

6.1.4 Europe (CEPI)

In 2011, direct CO_2 emissions intensity from fossil fuels decreased by about 1,000,000 tonnes from 2010, while the emissions per unit production remained at 0.34 kt CO_2/kt of product because of the parallel production decrease. Indirect emissions slightly de-

Table 3: Direct and Indirect CO_2 Emissions (CEPI)

	1990	2000	2008	2009	2010	2011
Direct CO_2 emissions						
Absolute (Mega tonnes)	39.89	41.94	39.05	35.50	37.13	35.95
Specific (kt CO_2/kt of product)	0.57	0.42	0.35	0.35	0.34	0.34
Indirect CO_2 emissions						
Absolute (Mega tonnes)	14.5	14.95	12.21	10.38	10.60	9.89
Specific (kt CO_2/kt of product)	0.20	0.15	0.11	0.10	0.10	0.09

creased in 2011 compared to 2010. Changes in historic data compared to the previous ICFPA Progress Update result from improved reliability for the data collection and are reflected in Table 3.
To support number of significant EU climate change measures, including 20% emission reductions, 20% energy efficiency improvements and a 20% renewable energy share, CEPI is active on several policy initiatives:

- Carbon accounting of land use and forestry activities (LULUCF)
- Biomass sustainability
- Indirect land-use change (ILUC)
- Biomass mobilization
- Carbon neutrality of biomass

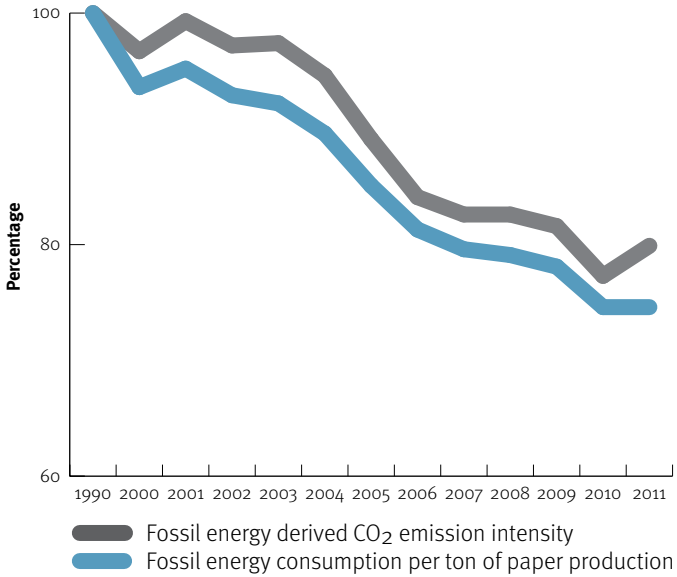
6.1.5 Japan (JPA)

JPA members are making efforts to achieve the climate targets set under JPA's Committed Action Plan on Environment through introducing energy-efficient equipment, promoting conversion from fossil energy to renewable and waste energy, and expanding forest plantation. Since 1990, fossil energy consumption per tonne of product and fossil energy-derived CO_2 emissions per tonne of product decreased by 25.4% and 20.1%, respectively (Figure 7). This is a further 4.4% and 2.1% decrease since the previous ICFPA report. The forest plantation area at the end of fiscal 2011 reached 691,000 ha, meeting 99% of the previous target of 700,000 ha.

In 2012, under the new Environmental Action Plan the following climate targets were introduced:

- Reduce fossil energy-derived CO_2 emissions by 1.39 million tonnes from 2005 levels by 2020
- Expand forest plantation area owned or managed by JPA member companies at home and abroad to 800,000 ha by 2020.

Figure 7: JPA Fossil Energy Consumption and CO_2 Emissions



6.1.6 Lebanon (SOPIL)

Members of SOPIL make significant use of alternative energy, using fuels including biomass (e.g., olive husks) and industrial waste for energy production. Members are taking advantage of preferential loans provided by the Lebanese government for green projects.

6.1.7 New Zealand (NZFOA)

The New Zealand Emissions Trading Scheme (ETS) puts a price on GHGs to provide an incentive to reduce emissions and to encourage tree planting. New Zealand is heavily reliant on the forest sector to meet its international emissions reduction obligations, and from mid-2012, approximately 51% of the total eligible post-1989 hectares were included in the ETS.

Net CO_2 removals from NZ forests have fluctuated from 1990 to 2010 due to tree growth, harvesting and changes in the area of forestry. A key factor in the ability of a forest to remove CO_2 is the age of the forest. A newly planted forest is slow at removing CO_2, but once established the forest will enter a period of rapid growth during which it removes the most CO_2. Once a forest has reached maturity, the growth slows and the rate at which it removes CO_2 decreases. Consequently, planting and harvesting cycles have a large impact on New Zealand's net CO_2 removals.

EUROPE: Roadmap 2050 Towards a Low Carbon Economy

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In 2011, CEPI launched the 2050 Roadmap to a low carbon bio-economy as a response to the ambitions set by EU policy-makers to reduce carbon emissions by 80% by 2050. Entitled "Unfold the future", this initiative engages the sector towards matching the decarbonisation effort while simultaneously creating 50% more added value. To reach these ambitious goals, new technologies need to be available by 2030. CEPI is using "open-innovation" to crowdsource ideas and identify breakthrough technologies. Two teams, composed of company representatives, suppliers' representatives, universities and research centers participants and other industry sectors, are given less than a year to brainstorm and identify these concepts. A jury of CEOs and high-level policy-makers will choose the winning concepts based on their contribution to CO_2 reduction and value creation, while taking feasibility and business case into account.

NEW ZEALAND: A bold plan towards an alternative and sustainable industry

The New Zealand Forest and Wood Products Industry Strategic Action Plan was published in March 2012 and provides a pathway to shape a strong forest and wood products sector for the future over the next 10 years. The Action Plan is ambitious – aiming to double the industry's annual export earnings to 12 billion NZD (10.2 billion USD) by 2022. To get there, the industry is shifting away from the current reliance on log exports and declining solid wood processing capacity to focus on a strong promotion of wood, diverse export markets, high-value wood-based manufacturing streams and growing domestic processing capacity and supported by collaborative and aligned industry sectors. Read the plan at http://www.woodco.org.nz/images/stories/pdfs/ForestWood_Strategic_Action_Plan.pdf

The NZFOA, together with the Bioenergy Association of New Zealand, recently developed a joint bioenergy strategy to engage with government and encourage further commitment to the development of renewable energy sources, especially with regards to the role of forestry. View the strategy here: http://www.nzfoa.org.nz/file-libraries-a-resources/cat_view/42-bioenergy

In the future, the forest sector hopes to be independent of non-renewable energy inputs apart from transport fuel (which may also eventually be sourced from New Zealand wood).

6.1.8 Russia (RAO BUMPROM)

RAO BUMPROM participated in the development of the *Russian Federation Forest Sector Outlook Study* to 2030 report published by the Food and Agriculture Organisation in 2012. According to the report, carbon sinks in Russia sequester between 500-700 million tonnes of CO_2 per year and contribute to the mitigation of global climate change.

6.1.9 South Africa (PAMSA)

PAMSA members are improving energy efficiency and reducing CO_2 emissions from the use of fossil fuels by:

- Improving the energy efficiency of production processes;
- Increasing energy generation through combined heat and power (CHP) technology;
- Increasing the use of biomass-based fuels for energy generation; and
- Implementing projects that will deliver carbon credits under internationally accepted flexible mechanisms, providing green energy to customers.

Based on initial cradle-to-grave studies, the pulp and paper industry in South Africa is considered to be a net absorber of GHGs, due in part to its cultivated plantations. While this conclusion must still undergo further quantitative analysis, this demonstrates the industry's overall contribution to mitigating climate change.

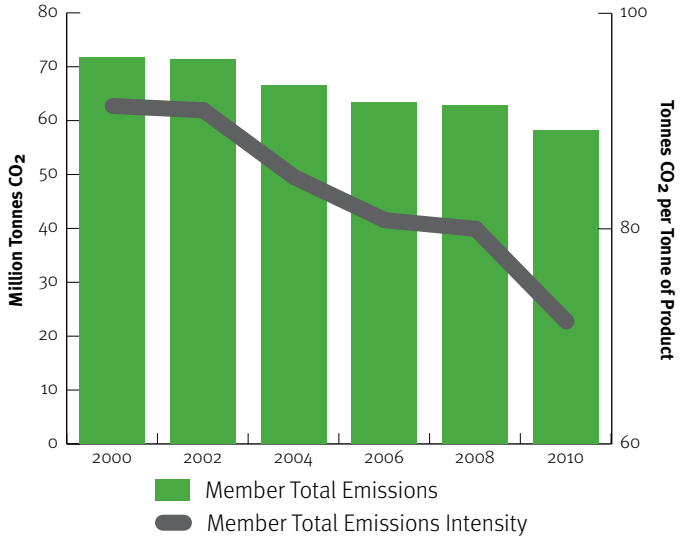
6.1.10 United States (AF&PA)

AF&PA members have reduced GHG emissions intensity by 10.5% since 2005. From 2000 to 2010, AF&PA members' absolute GHG emissions (direct and indirect) decreased 40% – a major improvement from the previous reporting period where absolute GHG emissions dropped 26.5% between 2000 and 2008 (Figure 8). The drop was a result of a combination of lower production, increased efficiency and greater use of forest biomass.

Nearly two-thirds of the energy used at member-company pulp and paper mills is generated from carbon neutral biomass, which has captured and sequestered carbon during the growing cycle. In addition, industry efforts to increase society's paper recovery rate are reducing the amount of paper products being sent to landfills that contribute to GHG emissions as they decompose.

AF&PA's sustainability initiative, *Better Practices, Better Planet 2020*, includes the goal to reduce the industry's GHG emissions intensity by at least 15% by 2020.

Figure 8: AF&PA GHG Emissions Reductions



NOTE: Since 2000, emissions intensity decreased by 19%; absolute emissions were reduced by 40%.

6.2 Promoting Sustainable Forest Management Worldwide

"...We support the extension of SFM certification systems to all nations, as an assurance that forest products are being produced sustainably from forests managed to the highest standards....."

— Excerpt from the ICFPA CEO Leadership Statement

6.2.1 Australia (AFPA)

Australia has continued to increase its levels of SFM certification, with 10.9 million ha certified in 2012, which accounts for over 95% of the total area of land available for forestry activities. The Australian Forestry Standard (recognized by PEFC) covers 10.1 million ha of both managed natural forests and plantations, while the FSC certification covers 895,000 ha, which is mostly on plantations. Furthermore, AFPA is a member of both the Australian Forestry Standard Limited and FSC Australia and all forest areas managed by AFPA members are certified either under PEFC, FSC, or both internationally recognized schemes.

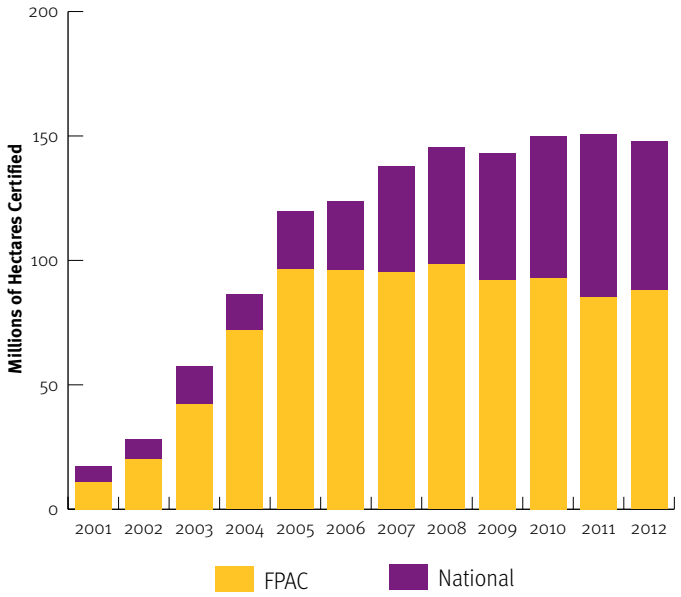
6.2.2 Brazil (BRACELPA)

BRACELPA is committed to SFM and as of 2012, 60% of the total area of forest plantations (3.9 million ha) is certified by FSC, and an additional 1.5 million ha are certified by Cerflor (the Brazilian certification system, endorsed by PEFC). In total, the area certified comprises 2.5 million ha of forest, as some of the management units are doubly certified. Forest plantations in Brazil are set in previously degraded areas and do not rely on the clear cutting of native forests to open new areas. The sector is engaged in multi-stakeholder initiatives such as The Forest Dialogue, which encourages discussions around REDD+, Genetically Modified Trees and the 4Fs (food, fibre, fuel and forests) challenge.

6.2.3 Canada (FPAC)

Canada has over 150 million ha of forests certified to either FSC or PEFC systems (Canadian Standards Association and Sustainable Forestry Initiative) with 66% of these forests being managed by FPAC members (Figure 9). Globally, Canada is responsible for over 40% of the world's certified forests.

Figure 9: FPAC and National Member SFM Certification

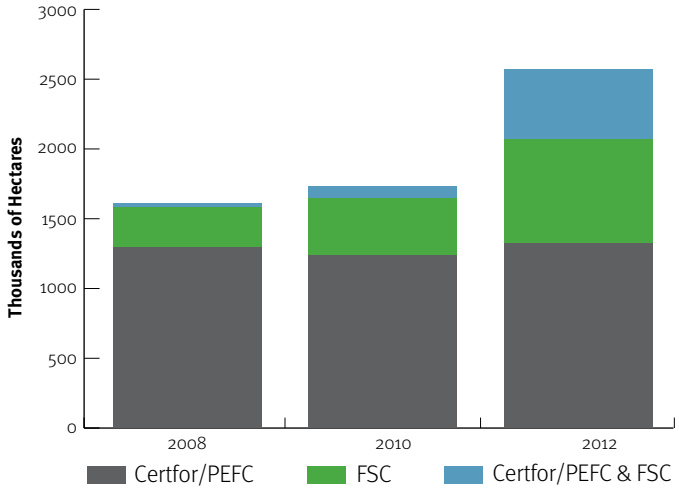


In May 2010, FPAC, its members and eight leading environmental organisations, signed the "Canadian Boreal Forest Agreement", the world's largest conservation agreement. It covers more than 72 million ha of public forests licensed to FPAC member companies across Canada. Key elements of the agreement include the development of world-leading forest management practices, joint planning for protected areas and caribou recovery, and taking action to improve the prosperity of the Canadian forest sector and the communities that depend on it. See www.canadianborealforestagreement.com.

6.2.4 Chile (CORMA)

CORMA uses two main certification systems: the Chilean Sustainable Forest Management (known as Certfor, which is recognized by PEFC), and FSC. By 2012, 2.1 million ha of Chilean land had been certified under either FSC or Certfor (Figure 10). 70% of the certified land is classified as productive planned forest. In the year 2011-2012, FSC certified forests increased by 656,738 ha because one of the major companies in the sector previously certified by Certfor also received FSC certification for their holdings.

Figure 10: CORMA Total Forests Planted under SFM Certification



6.2.5 Europe (CEPI)

CEPI is a member of both FSC International and the PEFC Council and plays an active role in promoting SFM. Most recently, CEPI tabled motions at the general assembly of FSC in Malaysia to lift the distinction made between pre- and post-consumer recycled fibre, considered to be not relevant in today's industry as all types of paper are recycled.

In 2010, the total surface of certified forests in the CEPI countries reached 86 million ha (taking into consideration the UNECE assumptions on forest surfaces that are certified by both FSC and PEFC), an increase of 6 million ha from the previous ICFPA Progress Report. This accounts for nearly 53% of the total forest area in the CEPI member countries. Comparably, 92.2% of forests managed by European pulp and paper companies are certified.

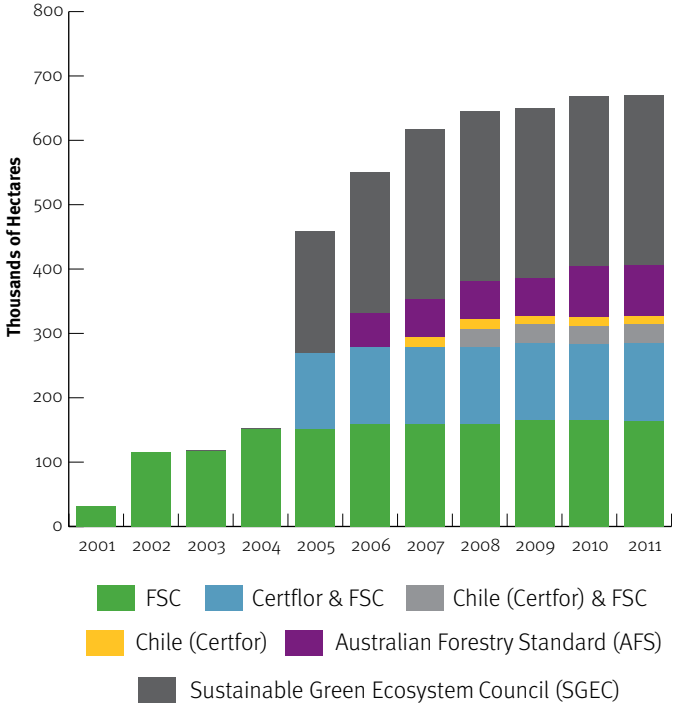
Nearly 18,000 Chain of Custody (CoC) certificates were granted in CEPI member countries by both certification systems, more than a 50% increase since 2010. Sales of CoC products have also increased. For instance, sales for paper, tissue and board are now 25% of total sales, compared to 13% in the last report.

CEPI published a report in November 2012 entitled "Resource efficiency = cascading use of raw materials." It highlights that using wood as raw material instead of converting it directly into energy creates 5 times more value and 7 times more jobs.

6.2.6 Japan (JPA)

JPA's members certify domestic plantations through the Sustainable Green Ecosystem Council (SGEC), the most common certification in Japan, and overseas plantations through FSC or PEFC. In 2011, the certified forest area in both domestic and overseas plantations was 670,000 ha, an increase of 20,000 ha from 2009 (Figure 11).

Figure 11: JPA Domestic and Overseas Forest Area Certification



6.2.7 New Zealand (NZFOA)

In 2012, the total area of plantation harvested increased 5% from the previous year with a total volume harvested of 25.7 million cubic metres. Strong international demand for New Zealand forestry products continued to drive the increase in harvesting. As of May 2011, 1,042,580 ha or 58% of New Zealand's total plantation forest

estate was certified by FSC, up from 51% in 2010.
In relation to FSC accreditation, NZFOA member managers are constantly reviewing management practices to reduce chemical use. This has resulted in a number of biological controls being implemented to target pest species. NZFOA has produced a number of resources aimed at helping members responsibly manage their forests, including the Environmental Code of Practice, a Road Engineering Manual and a Road Engineering operators' guide, plus a number of Health and Safety resources.

6.2.8 Russia (RAO BUMPROM)

Certified forests represent 26% of all Russian forest leased for logging. By 2011, 30 million ha of Russian forests were certified under the FSC scheme, and 177,000 ha were certified under PEFC. While all of the large international companies in Russia commit to SFM certification, most of the smaller operations do not.

6.2.9 South Africa (PAMSA)

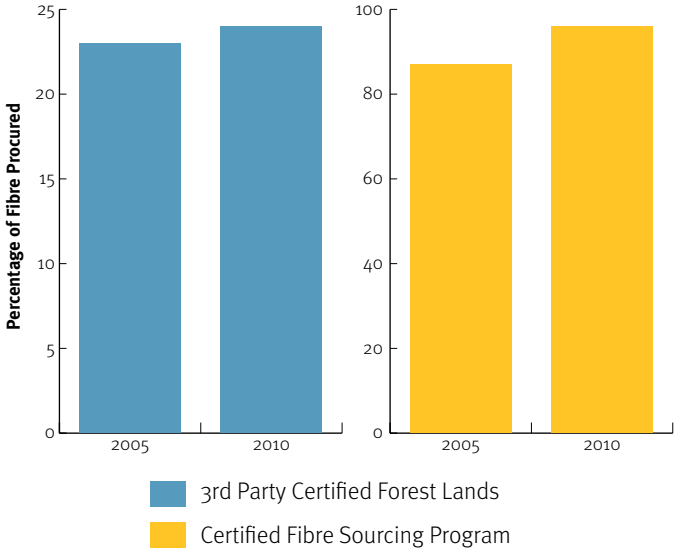
As of March 2012, the SFM certification area in South Africa decreased by approximately 10% (159,073 ha) since 2010. This was largely due to the withdrawal of one company from the FSC system. But with the marginal growth in chain of custody certification and with increased focus on FSC in the country, it is anticipated that this loss will be reversed within three years.

FSC International has given a clear indication that Africa, and specifically South Africa, will receive particular emphasis in the years ahead by appointing a FSC South Africa National Representative. The primary purpose of this focus is to complete the development of an FSC National Standard for South Africa by early 2013.

6.2.10 United States (AF&PA)

All AF&PA members that own forestland are required to conform to a credible sustainable forest management programme. Members that source wood fibre from forests owned by others must comply with sustainable procurement principles. These principles require providing information to landowners for reforestation following harvest, for the use of best management practices, and for identification and protection of important habitat elements for wildlife and biodiversity, including Forests with Exceptional Conservation Value.

Figure 12: AF&PA Certified Fibre Goal Progress



Between 2005 and 2010, AF&PA members increased the amount of fibre they procure from certified fibre sourcing programmes to 96% and the amount of fibre they procure from certified forestlands to 24% (Figure 12). Most private U.S. forest owners – approximately 10 million – manage their land responsibly, but many do not participate in a forest certification programme for reasons including costs and land management objectives.

AF&PA's sustainability initiative, *Better Practices, Better Planet 2020*, includes a goal to promote sustainable forestry practices, which includes increasing the amount of fibre procured from certified forest lands or programmes.

6.3 Combating Illegal Logging

"...We strongly oppose the practice of illegal logging, which contributes to deforestation and undermines the viability of legally harvested and traded products worldwide..."

— Excerpt from the ICFPA CEO Leadership Statement

6.3.1 Australia (AFPA)

In 2012, the Australian Government introduced the *Illegal Logging Prohibition Act* to address the issue of trade in illegally harvested timber. The Act imposes a high-level prohibition on importing or processing illegally logged timber with the aim to reduce the harmful environmental, economic and social impacts of illegal logging. The Australian forest, wood and paper products industry has strongly supported this initiative and has participated in the Illegal Logging Stakeholder Working Group to advise on the operational framework that will come into effect, via regulation, in 2014. This will include due diligence systems to verify the legality of the wood sourced for both importers and domestic processors. AFPA is also participating in promoting industry and community awareness of this issue of illegal logging, which not only contributes to forest degradation globally, but also undermines legitimate trade in legally and sustainably sourced wood and paper products.

6.3.2 Brazil (BRACELPA)

Illegal logging is relevant in the Amazon Basin region where BRACELPA's companies do not have operations. However, pulp and paper companies play a role by preserving or restoring 2.9 million ha of natural forests through mechanisms such as Legal Reserve Areas. BRACELPA worked with the Brazilian Forest Dialogue and its stakeholders to define 16 priority issues for the *Brazilian National Forest Code* that were formally sent to the government as a pledge from the industry and civil society. Some of the priority issues include the maintenance of the permanent preservation areas along water streams; allowing agroforestry activities within the permanent preservation areas, as long as no additional cutting was needed; economic incentives for land owners to comply with environmental regulations; valuing environmental services provided by the permanent preservation area and the legal reserve; and the establishment of a rural and environmental registry of properties which helps guarantee the control of wood origin and mitigates the possibility of illegal logging.

6.3.3 Canada (FPAC)

FPAC members continue to maintain their commitment to only use wood from legal sources, implementing a variety of traceability systems to verify the origins of their fibre. By the end of 2011, chain of custody certifications (CoCs) (FSC, PEFC) totalled 1,400, up from 1,292 CoCs in 2010.

In 2010, FPAC joined the Forest Legality Alliance, a joint effort of the World Resources Institute and the United States Environmental Investigation Agency. The group is supported by the United States Agency for International Development and companies in the forest sector. The goal is to reduce illegal logging by supporting the supply of legal forest products. FPAC has delivered communications tools to its members to help educate their customers about the importance of sourcing products from legal and sustainable sources. Additionally, FPAC supports initiatives such as the U.S. Lacey Act, the EU Timber Regulation and the *Australian Illegal Logging Prohibition Act*.

6.3.4 Chile (CORMA)

Forest plantations supply 99% of the timber for the Chilean forest product sector. Native forest is cut under management plans approved by the National Forest Corporation (CONFA), however, it is estimated that the country consumes 15 million cubic metres of fuelwood for heating purposes. This fuelwood is often illegally drawn from these native forests, especially in the Central and Southern regions of the country. For this reason, CORMA supports the establishment of a voluntary National Fuelwood Certification System that includes origin and quality standards for marketing fuelwood across the country.

6.3.5 Europe (CEPI)

The EU Timber Regulation lays down the obligations of operators placing timber and timber products on the EU market. In

2013, this regulation entered into application, making 2011 the last opportunity for CEPI to report on the implementation of its Code of Conduct for legal logging. Highlights from the last report include:

- 95% adoption of procurement policies with a legal sourcing requirement;
- 90% inclusion of legal sourcing requirements in purchasing contracts, up from 66% in the previous Progress Report;
- 95% use third-party verified tracing systems;
- 95% of the companies have the relevant documentation relating to the origin of non-certified purchasing; and
- 80% of wood-buying companies include legality in their education and training programmes.

CEPI is supportive of the EU initiatives on combating illegal logging, while ensuring that the proposed legislation will not be burdensome and negatively impact the competitiveness of the European industry. To ensure the best possible compliance of CEPI members to the EU Timber Regulation, CEPI has produced a decision tree, clarifying all the steps that the forest-products industries (both inside and outside the EU) would have to fulfill to comply with the provisions of the Regulation. The decision tree can be viewed at http://www.youtube.com/watch?v=lpnFpLMrKq4&list=UU52Y4zM-iRSb22hrUBgvGgQ&index=2

6.3.6 Japan (JPA)

JPA's monitoring of illegal logging has been used as a tool for ensuring credibility of its members' sustainability efforts since 2009. JPA's monitoring helps the government enforce its policies under the Act on Promoting Green Purchasing.

6.3.7 New Zealand (NZFOA)

NZFOA is a member of the New Zealand Forest Accord Partners, which has a joint position with forest industry and environmental organisations to end the import of forest products from illegally logged forests. New Zealand is the largest export supplier of forest products to Australia and, as such, has signed a pledge with its neighbour to stamp out illegal logging. The arrangement recognizes that illegal logging and associated trade is a significant global problem and that Australia and New Zealand will together play an important role in combating these practices.

6.3.8 South Africa (PAMSA)

Internationally, illegal logging is the denudation of natural forests and in South Africa, all natural forests are protected by law and indigenous trees are mainly managed by government and the private sector in conservation areas. This means illegal logging is a less important issue for PAMSA. All timber resources originate from plantation forestry of which 80% are certified to the FSC standard. No plantation forests have been established at the expense of natural/indigenous forests. South Africa will develop a controlled wood risk assessment to improve control of timber theft from plantation forests and timber plantings (which is regulated by law).

6.3.9 United States (AF&PA)

In 2012, AF&PA played a key role in a successful campaign leading to the postponement of Congressional consideration of a bill that would have watered down the effectiveness of the 2008 Lacey Act amendments. The 2008 amendments made it illegal to import wood and wood products harvested or traded in violation of the laws of a foreign country or a U.S. state.

Individual AF&PA member companies work diligently to safeguard against procurement from illegally logged sources, from taking careful legal records and specific identification of source to assessing the risk of sourcing to avoid illegal logging and carefully conducting risk assessments of suppliers. They work with forestry agencies in their investigations and can serve as external advisors on illegal logging to corporate customers. Many require suppliers to sign agreements that wood is from legally harvested sites, often using third-party certification of chain of custody and fibre sourcing standards.

6.4 Fibre Use and Recovery

"...The industry is committed to work with various stakeholders to increase recovery rates and invest in technology to increase recycled fibre input into modern paper and wood products, thus optimizing the use of wood as raw material...."

— Excerpt from the ICFPA CEO Leadership Statement

6.4.1 Australia (AFPA)

The recovery rate for paper was 77% in 2010-2011 compared to 51% a decade ago. The recovery rate in 2010-2011 represents 3.1 million tonnes of used paper that was collected, of which 1.8 million tonnes was used for domestic paper production and the balance exported to Asia.

Recent investment by domestic pulp and paper companies in 2013 will increase recycled paper capacity and production, including a $90 million deinked pulp plant diverting up to 80,000 tonnes of recovered paper for the manufacture of fine paper and a $500 million recycled paper machine to produce 400,000 tonnes of recycled brown paper.

6.4.2 Brazil (BRACELPA)

The volume of recovered paper consumed in Brazil in 2011 reached 4.3 million tonnes, an increase of 8% since 2010 and 44% since 2001 (Figure 13). The recovery rate in 2011 has remained stable at around 45% (Figure 14).

In 2011, the Brazilian government approved the Brazilian Solid Waste Policy (PNRS), a policy aimed to reduce the solid waste disposal and promote reverse logistics system. In the packaging sector, reverse logistics systems will enable the flow of products back to manufacturers for recycling or appropriate disposal. One goal is to recover recyclable material from urban solid waste, which means that there will be an increase in the material available for the paper industry. As one of the major recyclers, the paper sector has jointly submitted a voluntary proposal with value chain suppliers to reaffirm its commitment to support the initiative.

Figure 13: BRACELPA National Recovered Paper Used for Paper Production

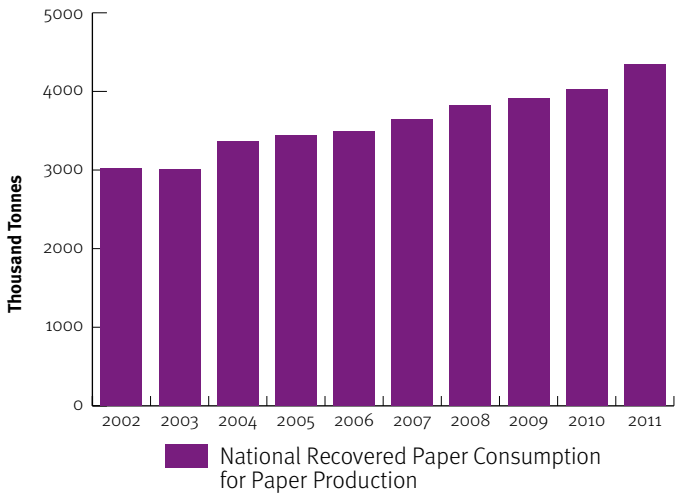
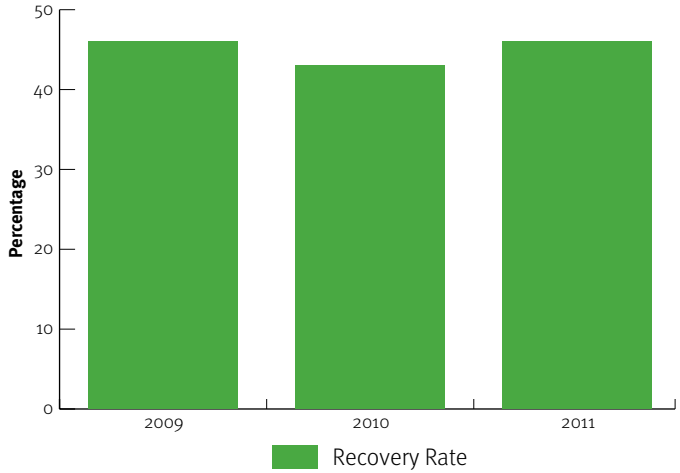


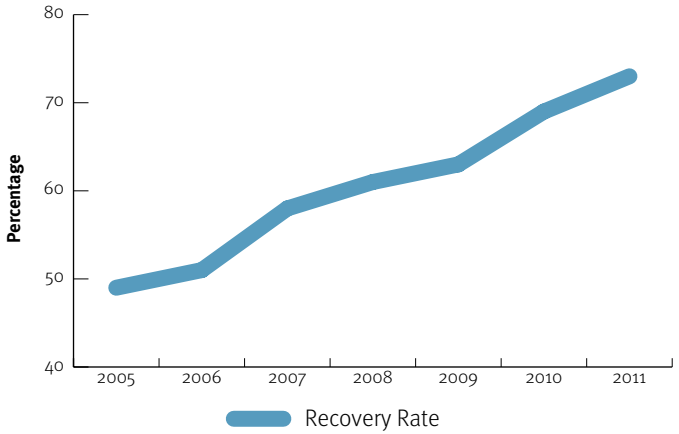
Figure 14: BRACELPA Recovery Rate



6.4.3 Canada (FPAC)

In 2011, the Canadian paper recovery rate was 73%, up from 66% in 2009, and well above the 55% recovery rate goal set by FPAC in 2003 to achieve by 2012. This increase is in part due to a steady demand for recycled products and increasing demand for recovered paper exports. Additionally, policies, such as those to reduce

Figure 15: FPAC Canadian Recovery Rate

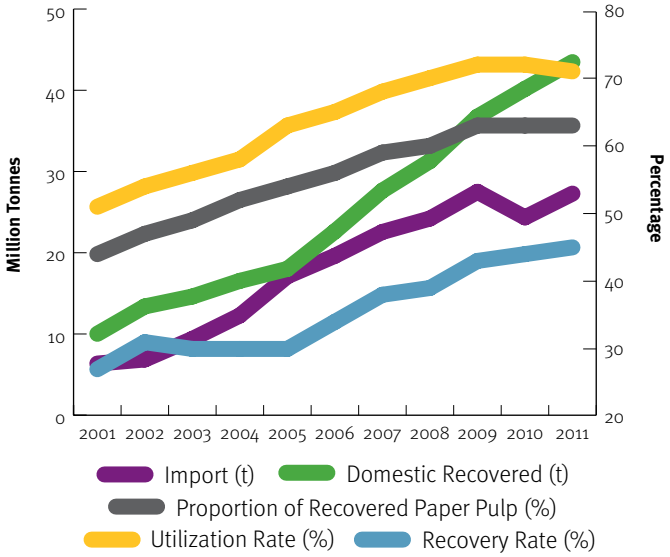


GHG emissions from landfills, are also contributing to increased diversion from landfill. The province of Québec, for example, has implemented a zero-organics to landfill policy that includes paper and paper products (Figure 15).

6.4.4 China (CPA)

CPA is committed to promoting domestic used paper recovery and utilization and improving the technologies used in recovered paper treatment. Since 2001, the domestic recovery rate increased year over year, representing a 30 million tonne increase in the quantity of paper recovered. The recovered paper utilization rate in 2012 is estimated at 72% (Figure 16). Because the amount of packaging paper used for export commodities in China exceeds imports, China imports large amounts of recovered paper to balance the proportions of recovered paper and raw materials used.

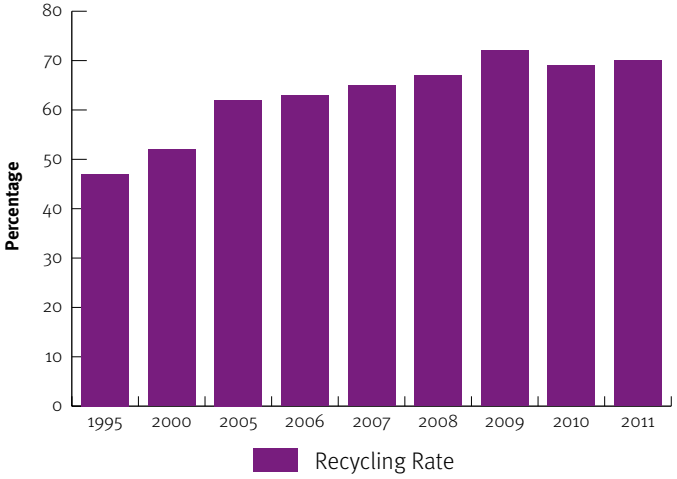
Figure 16: CPA Fibre Use and Recovery



6.4.5 Europe (CEPI)

In 2011, CEPI, together with the European Environment Bureau (EEB) and other recycling industries, founded the *Recycling Platform* with a view to improve the access to the "urban forest" of used paper products.

Figure 17: CEPI Recycling Rate



In 2011, the recycling rate in the CEPI region reached 70% with a total amount of collected paper and board of 58 million tonnes (Figure 17). The slight drop from 2009, when the recycling rate was 72%, is due to the economic downturn negatively impacting both consumption and collection.

CEPI reached its 2015 target of a 70% recycling rate and plans to maintain this target, considering the increased competition for recovered paper due to growing exports to Asia and the promotion of waste paper as an input for biomass energy. This is further

CANADA: A Vision for Making Innovative Products Using Nanoscience

IT

Pulp mills in Canada are producing dissolving pulp to make rayon for clothing, produce methanol or enable the production of specialty cellulose for pharmaceuticals. FPInnovations, a Canadian non-for-profit research centre, brought in the world's first state-of-the-art demonstration plant that produced nano-crystalline cellulose from wood fibre for use in everything from bone replacement to cosmetics. Other world firsts and potential game-changers are now in the pipeline.

UNITED STATES: Leader in Fibre-Based Innovation

IT AF&PA's members have taken significant strides to contribute to the global green economy. One company has successfully installed a commercial-scale lignin separation plant. Lignin is the chemical compound that binds to cellulose fibres and hardens the wood. The commercial production of lignin is destined for a wide range of industrial applications as a bio-based alternative to the use of petroleum and other fossil fuels. This is an important contributor to the green economy on two counts: first, it improves the efficiency of the company's pulp-making process; and second, it provides the market with reliable, high-quality sources of a useful, but underutilized, material. A wide range of potential applications for lignin exists, including fuels, resins and thermoplastics.

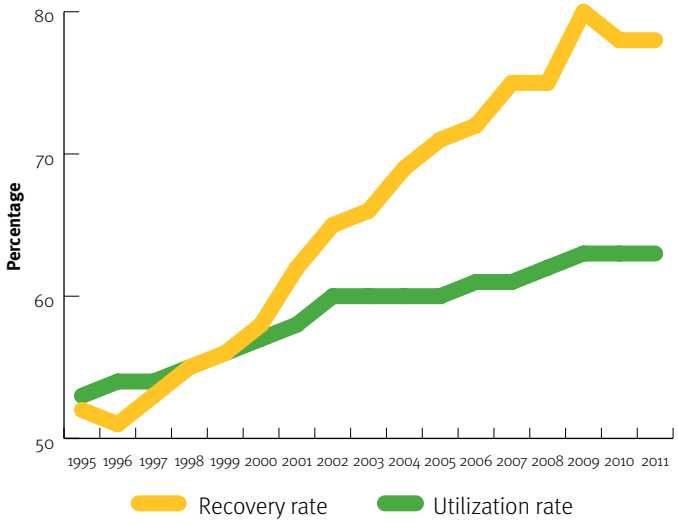
complicated by the EU Waste Policy which does not require the sorting of waste during collection. Waste collection is not standard across all EU Member States.

6.4.6 Japan (JPA)

JPA aims to achieve a recovered paper utilization rate of 64% by 2015. In addition to promoting use of lighter-weight paper, the Japanese paper industry will achieve this target by promoting and developing new grades of recycled paper; encouraging office recycling; and providing research and development for new products and applied technology associated with recovered paper (e.g. refuse paper and plastic fuel, pulp mold etc.).

For paper recovery, JPA, working with recovered paper collectors and distributors, has been making efforts to increase the recovery rate in cooperation with local governments, the private sector and NGOs. Thanks to these efforts, the paper recovery rate and utilization rate in 2011 were 78% and 63%, respectively (Figure 18).

Figure 18: JPA Recovery and Utilization Rates



6.4.7 Malaysia (MPPA)

In 2012, MPPMA members consumed a total of 1.79 million tonnes of recovered paper, including old corrugated cartons, newspapers, magazines and mixed paper, a 4% increase from 2010.

6.4.8 New Zealand (NZFOA)

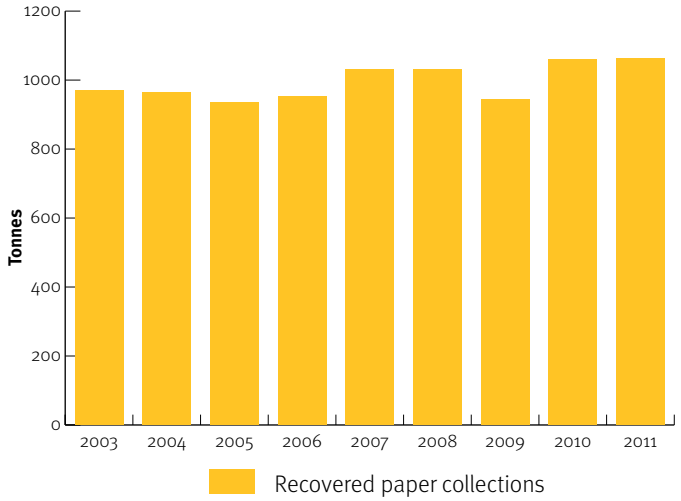
Published in January 2012, the NZ Forestry Science and Innovation Plan defined goals that will lead to significant increases in forest productivity without expanding the area forested. This will create opportunities for investment in high-tech sawmilling for domestic and export markets. Although solid wood is the main economic driver of the sector, complimentary industries such as pulp, energy, and panel production will utilize the residues from sawmilling and harvesting operations. New Zealanders will benefit from the range of employment and business opportunities that the sector will generate.

6.4.9 South Africa (PAMSA)

In 2011, recovered paper increased to nearly 60% from 58% in 2010. Recovered paper collections, in tonnes, are shown in Figure 19. All recovered paper is put back into the manufacturing process. The Paper Recycling Association of South Africa (PRASA), a subsidiary association of PAMSA, has committed to achieving a recovery rate of 63% within the next five years as documented in the Packaging and Paper Industry Waste Management plan that was submitted to government for approval in 2012.

PRASA has positioned itself as a recycling industry leader through several successful initiatives, including: the PRASA School

Figure 19: PAMSA Recovered Paper Collections



Curriculum Project focusing on the need for environmental education; the PRASA/FP&M SETA Entrepreneurship Course; PRASA members' curbside collections; and the establishment of buy back centres. These schemes are operating well and yielding good income generating opportunities for paper street harvesters among other things.

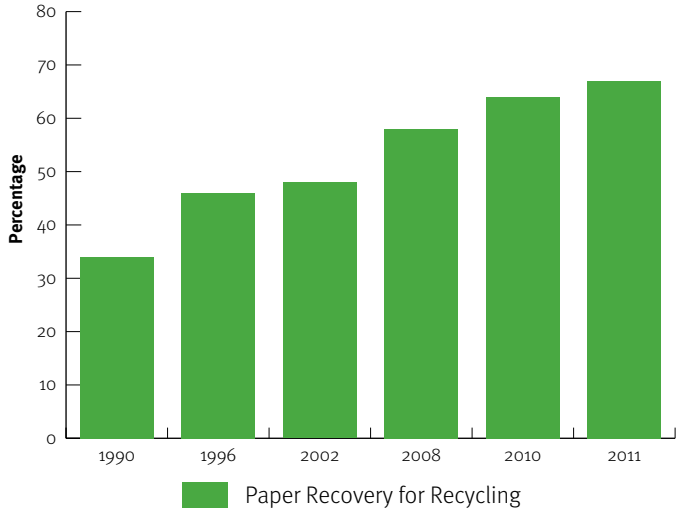
6.4.10 United States (AF&PA)

In 2011, 67% of all paper consumed in the U.S. was recovered for recycling, nearly doubling the U.S. recovery rate since 1990 (Figure 20). As of 2010, 87% of the U.S. population had access to curbside and/or drop-off paper recycling services, which has aided the recycling effort.

The paper industry's recycling success has provided an example and led the way for all other U.S. recycling efforts. To encourage the public to recycle, AF&PA has created programmes that educate students and their families about the importance of paper recovery and holds the annual AF&PA Recycling Awards programme to provide recognition and incentives for continuing success.

AF&PA's sustainability initiative, *Better Practices, Better Planet 2020*, includes the goal to exceed a 70% paper recovery rate for recycling by 2020.

Figure 20: AF&PA Paper Recovery for Recycling



INDIA: From Waste to Wealth

IPMA member Tamilnadu Newsprint & Papers Ltd. (TNPL) makes sugarcane bagasse based eco-friendly paper. By using bagasse, a waste product from sugar mills, TNPL preserves over 40,000 acres of forest land from depletion every year. TNPL developed a new technology to generate biogas from bagasse wash wastewater, effectively reducing GHG emissions and producing in-house bio-energy. This bio-methanation plant is the first Clean Development Mechanism (CDM) project of its kind in India. So far, the project generates around 40,000 to 45,000 Certified Emission Reductions (CERs) per annum, with a total of 161,956 CERs received to date and another 92,000 CERs to be issued shortly.

6.5 Environmental Management

"...We will comply with all regulatory requirements and apply environmental management systems to continuously improve the environmental practices and performance in our operations, including continuing to reduce the use of water and energy in our industrial activities."

— Excerpt from the ICFPA CEO Leadership Statement

6.5.1 Australia (AFPA)

AFPA has an overriding commitment to demonstrate world's best practice in environmental management through its ongoing engagement with governments, communities and stakeholders on environmental issues and voluntary third party certification for forest management of its members. A high priority for pulp and paper members has been to reduce their environmental footprint through reducing water and fossil fuel energy inputs, and monitoring progress through annual sustainability reporting.

6.5.2 Brazil (BRACELPA)

The Brazilian forest product sector continues to invest in water management through improved production processes, technological advancements, effluent management, and transformation of filtered waste into usable by-products.

Maintaining the biodiversity of native forests is an important issue for the Brazilian pulp and paper industry. The sector has helped to preserve, recover and protect 2.9 million ha of natural forests and the sector's planted forests also help to maintain the biodiversity of native forests. The improvement of forestry processes and landscape planning and management help the industry control impacts and implement conservation strategies. Some of the implemented strategies include ecosystem restoration, continuity of the food chain, monitoring of wild fauna, and mosaic planting systems.

In 2011, The Brazilian Forest Dialogue launched publications on "Silviculture and Biodiversity", "Sustainable Forests Mosaics" and "Silviculture and Water Resources". Access these reports here: http://www.dialogoflorestal.org.br/publicacoes/writings-of-the-dialogue/

In 2012, BRACELPA signed the Agroforestry Protocol for Forest Plantations with the State Governor of São Paulo, which includes principles from fire control to management of chemicals, water and soil.

6.5.3 Canada (FPAC)

Between 2005 and 2011, Canadian forest products companies reduced particulate matter and SO_X by 56%, primarily as a result of technology investments from the Pulp and Paper Green Transformation Program that helped accelerate the switch from fossil fuels (oil and coal) to renewable energy. A combination of process improvements and secondary treatment helped reduce effluent Biological Oxygen Demand by 34% and Total Suspended Solids by 72% over the same period.

In 2009 and 2010, FPAC released its *Bio-Pathways* project, which focused on the best ways to integrate emerging innovation with established operations. Since then, Canadian companies have been integrating bio-technology with their existing mill operations to extract more value from each tree harvested. These investments, along with commitments to zero waste, have helped the Canadian industry reduce the amount of waste sent to landfill by 30% from 2005 to 2011. Today, 99% of the wood that comes to the mill is used either as lumber, chips for pulp, energy, biochemicals, composting, and more.

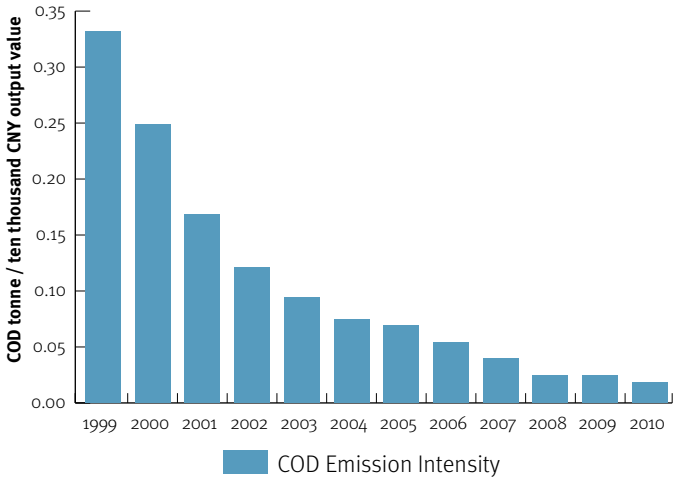
6.5.4 Chile (CORMA)

Clean Production Accords (CPAs) are voluntary agreements in Chile between companies and relevant environmental authorities to meet specific environmental targets. CORMA coordinated the signing of several CPAs over the years for the forest sector, including the most recent in 2010 for the panels and veneers industry.

6.5.5 China (CPA)

In the past ten years, the Chinese government and CPA committed to reducing pollutants in wastewater. From 1999 to 2010, the chemical oxygen demand (COD) emission intensity per 10 thousand CNY

Figure 21: CPA Chemical Oxygen Demand (COD) Emission Intensity



(~1,616 USD) (production output value) in the paper industry reduced, on average, 23% annually, representing a significant decrease (Figure 21).

6.5.6 Europe (CEPI)

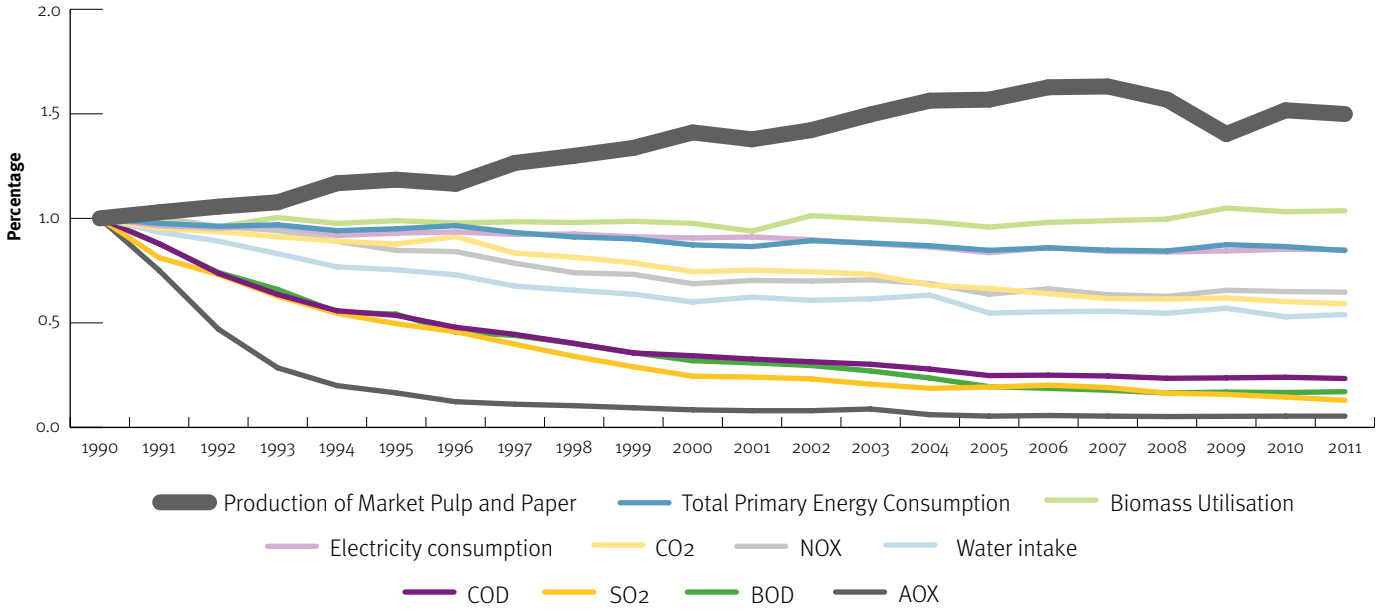
Most of CEPI's environmental indicators show a decoupling between the environmental impacts and the production of pulp and paper in Europe. The significant savings already realized make it difficult to further decrease impacts, as shown in Figure 22.

CEPI is active in supporting the new BREF (Best Available Techniques Reference Document) that is being developed by the European Commission as it may be an opportunity for the industry to further improve environmental impacts, provided it allows for the industry to remain competitive by offering some flexibility in adapting to the investment cycles in the industry.

6.5.7 India (IPMA)

The IPMA, together with the Energy Efficiency Council of CII-Godrej GBC has undertaken a bold initiative to "Make the Indian Pulp and Paper Industry World Class". One activity under this initiative is the CEO-led World Class Energy Efficiency initiative, which is meant to enhance competitiveness by focusing on energy efficiency, environmental performance, global best practices and

Figure 22: CEPI Paper Production - Decoupled Growth Levels and Environmental Impacts



JAPAN: High Standards = Strong Performance

RE

Japan has set high standards for using resources efficiently and their commitment to performance is strong. According to the International Energy Agency (IEA)'s Energy Technology Perspectives report, "energy efficiency potential for the Japanese paper industry's best available technologies (BATs) is very small (0.3GJ per ton of product) meaning the industry has already achieved the world's top level on energy efficiency". In terms of water quality, pulp and paper manufacturers have long invested in developing technologies to meet Japan's effluent standards, which are among the strictest in the world. As a result, effluent quality for the Japanese paper industry is often better than that of intake water.

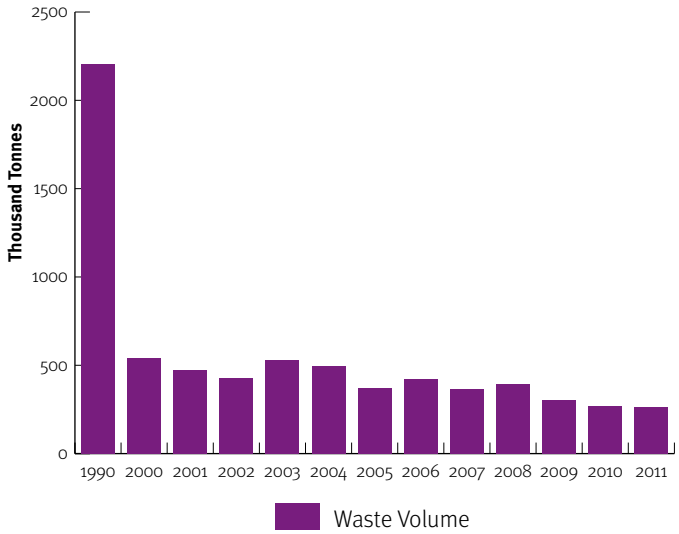
technology updates. Nearly 40 best practices have been identified for the Indian pulp and paper industry, which are now included in the National Best Practices Manual. The Working Group for this initiative traveled to Sweden to attend a 5-day workshop on cleaner production technologies for the pulp and paper industry.

6.5.8 Japan (JPA)

JPA is committed to reducing the amount of industrial waste to less than 350,000 tonnes by 2015. To achieve the commitment, the industry has been making efforts through using waste as cement material and alternative fuel, and developing new uses for them. Thanks to these efforts, final disposal of industrial waste decreased to 263,000 tonnes in 2011 (a reduction of 88% from 1990 results and 13% from the previous Progress Report), achieving the commitment for the third consecutive year (Figure 23).

To help establish environmental management systems in the industry, JPA set the target of certifying all member mills to ISO 14001. At the end of 2011, over 95% of member mills were certified.

Figure 23: JPA Volume of Final Disposal of Industrial Waste



6.5.9 New Zealand (NZFOA)

In addition to the NZFOA Code of Practice, which was established in 2008, the NZ Forest Road Engineering Manual and associated Operators Guide was published in 2012. This Guide contains much needed erosion and sediment control guidance, introduces new materials and methods and describes best practice-construction techniques.

A National Environmental Standard for Plantation Forestry is currently being negotiated and drafted by government and affected parties – forestry companies, professional bodies, indigenous people, NGOs and relevant government agencies. One of the key benefits of a Plantation Forestry National Environmental Standard will be consistent rules applying to forest operations throughout the country.

6.5.10 South Africa (PAMSA)

PAMSA's forestry business has an Environmental Management Guideline for Plantation Forestry in South Africa. PAMSA will be revising this best management practice document to reflect changing legislation and progress in the scientific knowledge associated with both silviculture and harvesting practices during 2012 and 2013.

Key issues relating to environmental management in South Africa include:

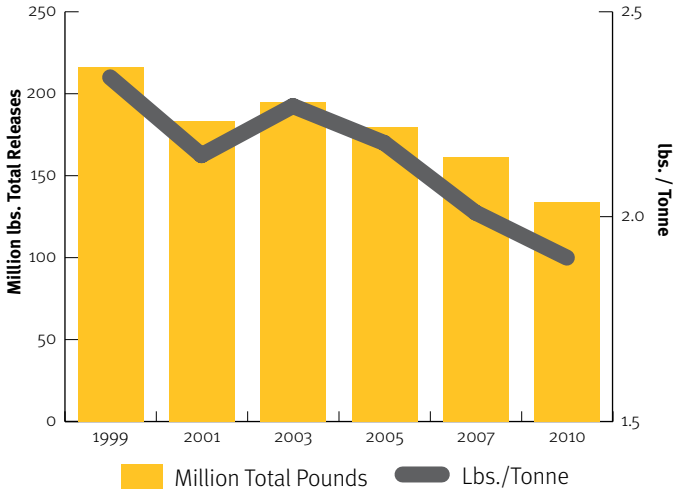
- Access to sustainable fibre in the short, medium and long term to meet the needs of the business and our customers;
- Minimizing contributions to climate change and recognizing the potential opportunities presented by forestry in the mitigation of climate change;
- Responding to concerns regarding biodiversity; and
- Increasing products' eco-efficiency.

6.5.11 United States (AF&PA)

AF&PA member companies are required to adhere to the association's Environmental, Health & Safety (EHS) Principles as a condition of membership. In accordance with the EHS Principles, members have reported adherence for 2010, confirming that environmental, health and safety policies are in place and that the companies perform frequent safety audits.

Forest products companies also regularly report on the chemical substances released from their facilities. The metric used to track

Figure 24: AF&PA Pulp and Paper Mill TRI Releases



these substances is the Toxics Release Inventory (TRI) quantities. At AF&PA pulp and paper mills, TRI releases in 2010 were 25% lower than in 2005, as shown in Figure 24. A primary purpose behind this government reporting programme is to inform communities about the release and management of chemical substances in the environment.

CHILE: Planting Trees to Help Fight Erosion in Rural Communities

BC CS

Erosion is a major issue facing Chilean farmers and landowners. Developed by CORMA and its member companies, the Peasant Afforestation Programme provides forest seedlings and education support tools to local landowners struggling with severely eroded and damaged land. Private contributions have played an important role in implementing this programme through providing professional assistance and technical aid.

The programme's impact on soil quality and community well-being has been significant. From 2011 to 2012, 1,000 hectares were planted through the programme, helping 1,400 families in fourteen counties. Now in its third phase, the Peasant Afforestation Programme anticipates delivering 1.5 million seedlings per year to 12,000 families in 37 counties.

This case demonstrates the forest companies' support towards community development and improving rural families' social and economic well-being, and their commitment to environmental stewardship through improving the quality and productivity of the land.

6.6 Investing in Workers and Communities

"...We will contribute to the economic and social well-being of our workers and the communities where we operate...."

— Excerpt from the ICFPA CEO Leadership Statement

6.6.1 Brazil (BRACELPA)

The pulp and paper industry is responsible for 128,000 direct and 640,000 indirect jobs, as well as creating income alternatives for surrounding communities. The industry partners with small and medium size farmers to generate income, build capacity, diversify production and maintain families in rural areas. These forestry partnerships, or "outgrowers systems", currently supply 20% of wood for pulp and paper production in Brazil. In 2011, the pulp and paper sector invested in more than 700 social projects throughout 18 Brazilian States. These projects aim to improve health, education, culture, environment, sports, and leisure to the community.

Table 4: Brazil – Percent Spent on Local Suppliers

Expenses with Suppliers (R$ Thousands)	**2009**	**2010**
Expenses with local suppliers	8,977,744	9,215,813
Total expenses with suppliers	13,715,356	12,359,692
Share %	66%	75%

Although there are no official policies regulating preferred hiring of local suppliers, member companies make 80% of their purchases of inputs and labor hiring within the States where they operate, and as of 2010, 75% of total supplier expenses are spent on local suppliers, as shown in Table 4.

Sourcing takes into account many criteria, such as quality, cost, deadlines, services, social responsibility, and respect for the environment. For instance, human rights clauses in supplier contracts have considerably increased from 77% of all major suppliers in 2009 to 83% in 2010.

6.6.2 Canada (FPAC)

The forest products industry in Canada employs 240,000 people in over 200 communities. Additionally, the industry is one of the largest industry employers of Aboriginal Canadians, employing over 17,000 Aboriginal peoples. The industry wage is 9% above the national average.

While the Canadian forest products sector faced a difficult decade where mills closed and jobs were shed, there are now major career opportunities in the sector. A 2011 study for the Forest Products Sector Council underscored the aging demographic in the industry and the urgent need for tens of thousands of additional workers to meet the needs of the bio-economy. To support the industry's Vision2020 and its goal of renewing the workforce with at least 60,000 new recruits, including women, Aboriginals and immigrants, FPAC launched the TheGreenestWorkforce.ca, a resource tool that provides information on the future direction of the forest products industry and career opportunities across the country.

FPAC's members have steadily decreased the recordable incident rate, dropping 45% between 2007 and 2011 primarily due to ongoing education and training around workplace safety.

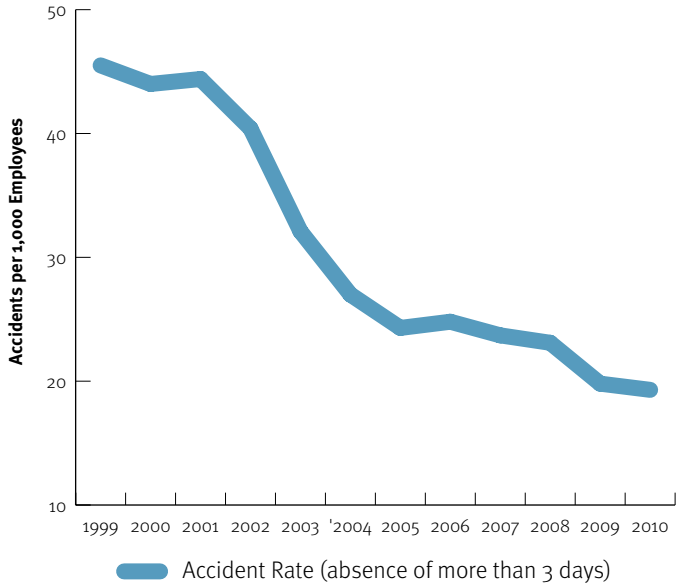
6.6.3 Chile (CORMA)

As shared in the previous Progress Report, CORMA developed a voluntary-based Competence Certification system to properly train workers and improve productivity, effectively reducing the accident rate in the industry. Since 1994, more than 49,000 certificates have been issued to nearly 25,000 workers. Since the last Progress Report, an additional 14,629 certificates have been issued (Figure 25). The main achievement has been the properly trained workers' improved productivity and a reduced accident rate. There has been a slight decrease in the amount of certificates awarded since 2009 due to the saturation of applications.

The accident rate for CORMA's member companies decreased to 0.99% in 2011, from 1.33% in 2009, due to the Working Competences certification programme's focus on silviculture and logging. In that same period, the accident rate for silviculture decreased to

Figure 25: CORMA Number of Working Compentencies Certificates Awarded

Figure 26: CEPI Accident Rate



1.27% from 1.72%; increased for pulp and paper to 0.45% from 0.36%; decreased for wood based panels to 0.73% from 1.58%; and increased in sawmills and remanufacturing to 1.80% from 1.38%.

6.6.4 Europe (CEPI)

CEPI and industryAll Europe, the European Trade Union Federation, launched a good practice report on health and safety in the European paper industry in 2012. Stemming from a formal European social dialogue for the paper sector, the report includes 22 best practices that were collected from members and can be easily implemented in mills all over Europe.

CEPI also renewed a partnership with the EU agency of occupational safety and health at work (EU-OSHA) for a two-year campaign entitled “Working together for risk prevention”.

CEPI distributes Safety alerts and recommendations for prevention and precautions to help the sector improve its health and safety performance. Accident rates have been re-adjusted retroactively, leading to slightly different results than previously reported but still reflecting a downward trend, in line with the CEPI aspirational target of zero accidents (Figure 26).

6.6.5 India (IPMA)

The Indian paper industry provides employment to nearly 1.5 million people and contributes approximately 30 billion rupees (553.3 million USD) to the government’s revenue through taxes on production and levies. With approximately 515 companies engaged in the manufacture of paper and paperboard and newsprint in India, the government regards the paper industry as a high priority industry. The growth of the paper industry in India has been constrained due to the high cost of production caused by the inadequate availability and cost of raw materials and energy.

Some IPMA members have corporate social responsibility policies and programs that are focusing on improved drinking water systems, road development and street lights, and other community welfare activities for the year 2012-2013.

6.6.6 Japan (JPA)

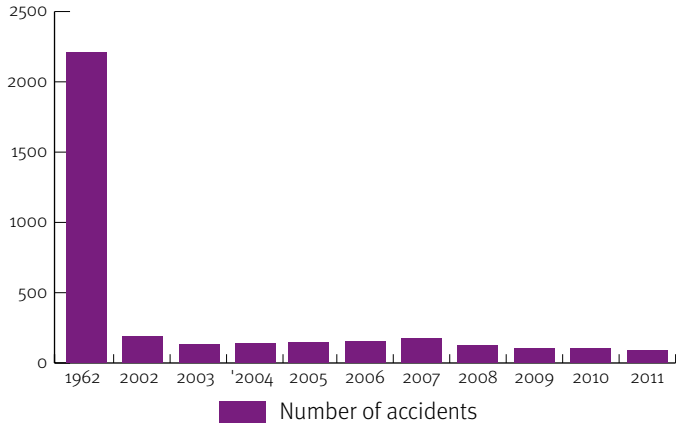
JPA manufacturers and their affiliates place an absolute priority on safety. The industry implements regular meetings among safety representatives and has been holding an annual national pulp

SOUTH AFRICA: Health Programmes for the Prevention and Management of HIV/AIDS

BC

The prevalence of HIV/AIDS is alarmingly high in South Africa. In 2008, PAMSA member Mondi set up a mobile clinic in the Kwazulu-Natal Midlands in partnership with an NGO and the government. The purpose of the project was to take an HIV/AIDS programme and primary health care to contractors and communities living around the forestry operations. Following the success of this pilot project, the model was extended to the remote rural areas of Mkhondo, Mpumalanga, where Mondi significantly contributed to the deployment of two additional mobile clinics. Mondi has been involved in providing community programmes to address the needs of orphans and vulnerable children directly affected by the disease. The project also promotes access to social and economic support, including education, healthcare, food or nutritional assistance and guidance, protection from abuse, trauma counselling and skills training.

Figure 27: JPA Number of Accidents with or without Lost Workdays



and paper industry safety and health convention since 1961. As a result of these efforts, the number of accidents with restricted or lost workdays has successfully decreased compared to 1962, when the industry started compiling statistics. In 2011, there were 89 recordable accidents, compared with 188 accidents in 2002, a drop primarily due to increased awareness and activities (Figure 27). However, three or more fatal accidents or other serious industrial accidents have occurred every year for the past five years, which is the utmost important issue for the industry to address and eliminate.

6.6.7 Lebanon (SOPIL)

In 2008, the Syndicate of the Owners of Paper and Packaging Industries in Lebanon helped found LibanPack, the Lebanese Packaging Center. LibanPack provides ongoing training and study tours to companies and food industries in Lebanon, including training and conferences on sustainable packaging. In addition, LibanPack holds an annual Student StarPack competition to engage youth and promote innovation in the packaging sector.

6.6.8 New Zealand (NZFOA)

New Zealand's "Incident Reporting Information System" (IRIS) allows companies to compare accident rates against industry averages, identify abnormal incident rates and develop focused strategies to address them. A recent strategy has targeted the "breaking out" operations (e.g. log stripping) and tree-felling as significant contributors to national industry accident rates. The IRIS system has also recently been adopted by the Australian industry.

The Forest Industry Training Organisation (FITEC) has an active training programme based on nationally recognized qualifications and has developed an active career programme to identify opportunities and career pathways for new entrants into the forest and processing sectors.

NZFOA launched a "Drug and Alcohol Code of Practice" in 2007, which is due for review in 2013 to take into account the growth of the use of cannabinoids. This has been influential in addressing and reducing drug problems within the forest sector. In addition, significant resources are being committed by industry and government to ensure the updated Code of Practice is accessible in a suitable form by all industry participants.

6.6.9 South Africa (PAMSA)

High unemployment and poor education are challenges that PAMSA and its members have met head on. The sector, from forest to mills, employs over 140,000 people, resulting in tangible development in rural areas, schools, hospitals and roads, amongst others.

PAMSA spends over 4 million SA rands (~430,000 USD) every year on skills development for employees in the pulp and paper sector, particularly for those formerly disadvantaged. A ladder of learning has been developed to ensure a link between the skills programme, diplomas and degrees to encourage continuous learning. PAMSA is currently measuring the impact of its education initiatives.

The HIV/AIDS pandemic continues to cause illness and deaths amongst employees (particularly forestry contractors) and community members. PAMSA's members create awareness of the disease to avoid onward infection; encourages counseling, testing and treatment; and provides treatment to employees.

6.6.10 United States (AF&PA)

Maintaining safe and healthy workplaces and communities are a top priority for AF&PA members. Members carefully keep track of job safety performance and provide programmes designed to maintain and improve health both in the plant and out in the communities they serve.

Compared to the 2006 baseline, AF&PA members have reduced their incidence rate by 24%, representing a further 7.4% decrease since the last Progress Report. This substantial progress is due to worker training, increased automation, and a host of injury prevention measures and safeguards that have been instituted over the years.

The U.S. Occupational Safety & Health Administration (OSHA) recognizes industrial facilities that implement enhanced safety programmes and maintain on the job injury and illness rates below national Bureau of Labor Statistics averages for their respective industries. As of February 29, 2012, safety programmes at 71 pulp and paper mills were recognized as outstanding, along with 80 wood products facilities and five logging yards.

AF&PA's sustainability initiative, *Better Practices, Better Planet 2020*, includes the goal to improve the industry's safety incidence rate by 25% by 2020.

7. Tables and Figures

Tables:

Figures:

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