# A strategic assessment of Asian Pacific biomass demand and supply to 2030

**A multi-client study**

*English version available immediately*
*Japanese version may be available on request (for a supplementary fee)*

HAWKINS WRIGHT

## Content of this prospects



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# Why this report is needed

North-east Asia is quickly emerging as a new engine of growth for the biomass and bioenergy industries. Driven by pledges made under the Paris Agreement to reduce greenhouse gas emissions, and by ambitious national renewable energy targets, Japan, South Korea and potentially China will see a rapid expansion in biomass-fired power and CHP generation over the next decade. This should create a large new market – rivalling that of Europe – for global biomass suppliers.

### Feedstock sourcing strategies

The emerging Asian market is likely to develop in different ways. While cofiring and conversion projects may favour wood pellets for technical reasons, new-build biomass plants with modern fluidised bed boilers will have greater fuel flexibility, including wood chips, palm kernel shells (PKS) and, in some cases, rubberwood, bagasse and other agricultural residues.

South Korean and Japanese imports of biomass are already growing rapidly. Imports of wood pellets, PKS and wood chips have quadrupled over the past four years to 4.8Mt. Questions remain, however, about the availability of biomass feedstocks at price points that are within the paying capability of the Asian generators.

Wood pellet supply chains are well-established, with bankable counterparties and robust sustainability criteria, but new demand will require new pellet manufacturing capacity. If this new capacity is to be developed, whether it be in Asia, North America or Australia, for example, most pellet suppliers will require long-term and bankable offtake contracts priced at levels that justify the investment.

An alternative is palm kernel shells. PKS is a lower-cost fuel, but its supply is limited to countries where oil palm is grown, mainly Indonesia, Malaysia and Thailand. Export availability is small relative to the potential demand. Some of the counties of origin are keen to encourage the local consumption of PKS to help meet their own renewable energy targets. Indonesia, for example, imposes an export tax on PKS to discourage exports, adding another element to the fuel supply risk.

Wood chips are another alternative. There is a well-established wood chip supply chain in Asia that currently serves the pulp and paper industry almost exclusively. Trade in energy chips is being developed alongside these pulp chip trade flows, but the Asian chip market is tightening. Demand for pulp quality wood chips is rising, particularly in China, while the supply of wood chips from Indonesia, Thailand, Vietnam, Australia and Latin America is struggling to keep up. Potential energy chip consumers in Asia may soon find that they are competing with the superior paying capability of pulp manufacturers.

So, the feedstock sourcing strategies for prospective generators of biomass heat and power in Asia are not at all straight forward. Nor are the marketing strategies for prospective biomass suppliers.

### Management of supply risk

In developing a fuel sourcing strategy, utilities need a thorough understanding of the biomass resource base from which they intend to source their fuel, together with the commercial and technical attributes of alternative biomass materials and suppliers. As is always the case in the energy industry, the management of fuel supply risk will be of paramount importance. This report pays particular attention to the comparative costs of biomass supply to Asia for different materials from different origins as well as to the robustness of their supply chains. It also assesses the sensitivity of supply cost to changes in raw feedstock costs, freight costs and exchange rates, for example.

Likewise, biomass suppliers require a deep understanding of the energy markets and of the policy mechanisms that are used to support the development of renewable energy in each jurisdiction. In Europe, policy risks were, in general, poorly assessed and suppliers will be keen to avoid making similarly expensive errors in Asia. A key focus of this report is an analysis of the paying capability of Asian biomass buyers and the sensitivity of their business models to changes in policy mechanisms, electricity prices, exchange rates and other variables.

### Methodology:

This report is based upon extensive market research in Japan, South Korea, China and south-east Asia. This fieldwork yielded unique insights into the reality of the Asian biomass market and its future prospects. Desk-based research and interviews with industry participants were also an important supplementary source of information. Over 35 years Hawkins Wright has built up a wide network of contacts, and extensive market information databases. This experience has enabled us to provide unrivalled, highly respected market intelligence.

# Summary of report contents

- **Electricity generation in Japan, South Korea and China.** Market structures and the factors driving the countries' renewable energy policies.
- **The operation and value of policy instruments** (e.g. Feed-in Tariffs in Japan and the Renewable Portfolio Standard in South Korea) used to promote the development of renewable electricity generation. The value of these instruments to a biomass power producer. The biomass paying capability of a variety of hypothetical biomass power projects, both cofiring and 100% dedicated biomass plants.
- **Profiles of biomass power projects in the region**, including both dedicated-biomass and cofiring projects. The capacity of each project, including its ownership and its technical, planning and financial status. Each project's estimated annual feedstock requirement and its likely feedstock preferences/flexibility, port and transport infrastructure. Insights into the procurement approaches used by different buyers.
- **Forecasts of biomass feedstock demand** in Japan, South Korea and China to 2030, distinguishing between wood chips, wood pellets and PKS.
- **Feedstock supply.** Comprehensive assessments of biomass availability – wood chips, wood pellets, PKS and agri-residues – domestically and in the principal feedstock supply regions around the Asian Pacific Rim: South East Asia (Vietnam, Indonesia, Malaysia, Thailand and the Philippines), North East Asia (China and eastern Russia), Australia, North America (British Columbia, the US Pacific North West and the US South) and Latin America.
- **The competitive advantages and disadvantages** of potential sources of feedstock supply.
  - **Short and long run costs of biomass supply** to CIF Japan, South Korea and China, per tonne and per GJ: considering the price of raw biomass – wood fibre (roundwood and residues) and PKS – processing costs (chipping & pelletisation etc.), storage and logistics and the capital invested in supply chains.
  - **The sustainability of biomass supply**, commercially and environmentally. Calculations of the GHG emissions of different feedstock supply chains are included.
  - **Advantages and disadvantages of different feedstocks** downstream of CIF are discussed. Comparisons of the chemical and physical composition of different biomass fuels, how these features influence power plant efficiency, storage and handling capacities, CAPEX requirements, feedstock substitution.
- **Constraints and risks for investors and biomass suppliers**: planning policy; environmental policy, including sustainability criteria and forest certification; bankability of suppliers and offtakers, feedstock supply risk; technical/operational risk; political risk etc.

## Who should read this report?

This report will be essential reading for all companies with exposure to the emerging biomass market in the Asian Pacific Rim, including energy generators, wood pellet and other biomass fuel suppliers, energy and biomass traders, forestry/plantation owners and investors, non-energy wood chip buyers (e.g. pulp manufacturers), oil palm plantation owners and palm oil processors, shipping companies, financial institutions, energy regulators and policy makers.

## Questions answered...

- What resources will be available to supply fuel to biomass heat and power generators in north-east Asia through 2030?
- Under different scenarios, what is the outlook for biomass demand in north-east Asia through 2030? What forms of biomass will be favoured; wood chips, wood pellets, PKS...?
- What are the advantages and disadvantages of the different forms of biomass with respect to cost competitiveness, sustainability criteria, combustion characteristics, logistics and the bankability of counterparties?
- What are the short-run and long-run biomass paying capabilities of generators in Japan and South Korea? How do the generators' paying capabilities compare to the costs of feedstock supply?
- What factors should a generator take into account when developing an optimal biomass fuel supply strategy?

# Experience and expertise of Hawkins Wright

Hawkins Wright Ltd. is a privately-owned consulting company headquartered in London, UK. With more than 35 years of experience, we are a trusted source of information for international pulp, paper and biomass industries. Our services include consultancy assignments on a full range of marketing, financial and strategic subjects as well as regular multi-client reports and newsletters.

Hawkins Wright is highly successful within its specialist areas. Our bioenergy practice has been operating for ten years and regularly wins consultancy assignments from leading companies and investors in the biomass and energy industries. In recent years we have provided due diligence services to more than ten individual biomass power projects, advising on the biomass fuel market, fuel procurement strategies and contracting options.

We have launched three flagship information services for the bioenergy sector, covering the areas of biomass feedstock markets, renewable electricity and heat and the interpretation and impact of government policy. Our monthly **Forest Energy Monitor** has been published since 2009, and has retained a loyal readership throughout this time. Our quarterly **Outlook for Wood Pellets** service is subscribed to by companies that control >85% of North American industrial wood pellet capacity and at least 55% worldwide.

Hawkins Wright is similarly successful in other forest industry sectors. In pulp, for example, companies that control over 90% of global market wood pulp capacity are subscribers to our services.

Hawkins Wright has worked in Asia for many years. Most of the large Japanese trading companies, for example, subscribe to our services and/or have commissioned private consultancy assignments from us. We are also well known in South Korea, having provided consultancy services to several South Korean paper companies as well as some utilities. In China, Hawkins Wright has published its **Defining the China Market for Pulp, Paper and Board** report annually since 2003, and we have provided market due diligence services to several Chinese papermakers and investors.

This deep penetration of global forest products markets has allowed Hawkins Wright to develop high level contacts throughout the industry and unique insights into the trends that are driving the strategic decisions of forest products and energy companies worldwide.

Hawkins Wright is entirely independent. We are not involved in the buying, selling, growing, manufacturing or management of timber resources, pulp or paper, wood pellets, lumber, energy or carbon. Our advice is therefore completely objective and untainted by conflicts of interest.

## Our bioenergy consultancy services:

- Due diligence for biomass power projects
- Biomass market assessment
- Modelling and risk assessment
- Policy interpretation and explanation
- Fuel procurement strategy assessment
- Supply/demand analyses and price forecasts

## Recent assignments

- A due diligence assessment of the wood pellet supply strategy of a Japanese biomass power project. Comissioned on behalf of a prospective investor (a Japanese bank).
- An assessment of cost competitiveness of different wood pellet suppliers CIF Japan.
- A market due diligence assessment of wood pellet supply in Asia to 2037. The report was commissioned by a Japanese bank considering debt finance for a 75MW biomass power plant.
- A due diligence assessment of a new-build pellet CHP project in the United Kingdom.
- A due diligence assessment of a proposed investment in an existing wood pellet mill in the United States.
- A commercial feasibility study into a proposed investment in a greenfield wood pellet mill in Australia.
- Due diligence assessments of the feedstock supply strategies of three separate coal-to-biomass conversion projects in the United Kingdom.

# Our client base

Hawkins Wright's client list includes leading pulp and paper manufacturers from around the world, energy companies, forest owners, wood pellet manufacturers, pulp, paper and biomass agents and traders, financial institutions, equipment and raw material suppliers, and national, state and provincial governments and agencies. Four fifths of our revenue is generated from clients outside of the UK.

See following link for a full list of our clients www.hawkinswright.com/market-research-pulp-paper/our-clients

## Our biomass and bioenergy clients include

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