Submission No 245

INQUIRY INTO PROPOSED ENERGY FROM WASTE FACILITIES

Organisation: Kanadevia Inova Australia Pty Ltd

Date Received: 30 October 2025

Kanadevia INOVA

Attention:
SELECT COMMITTEE ON PROPOSED ENERGY FROM WASTE FACILITIES

Via Lodge a Submission

Kanadevia Inova Australia Pty Ltd

www.kanadevia-inova.com

30 October 2025

Subject: Inquiry into proposed energy from waste facilities

Dear Select Committee,

Intro Kanadevia Inova for a Future free of waste

The recovery of valuable resources from residual waste – Waste to Energy (WtE) – is our core business. Around this, we've built a rich service offering spanning everything from project development and constructing entire plants and system solutions to custom manufacturing spare parts. We work with our clients to deliver pioneering projects for the future – efficiently, reliably, and to the very highest standards of quality. Find out for yourself at www.kanadevia-inova.com

Kanadevia Inova (KVI) is a global greentech company operating in Waste to Energy (WtE) and Renewable Gas. Our roots are in Switzerland, where we were established in 1933 as "L. von Roll Aktiengesellschaft", later known as Von Roll Inova. Since 2010 we have been part of the Kanadevia Corporation, one of Japan's largest industrial and engineering firms and a longstanding partner and licensee of Von Roll Inova. To this day we foster the spirit of a traditional Swiss company combined with the know-how and economic strength of an international group.

We have been building and maintaining plants for almost 90 years. We develop projects with our clients and then draw on our experience as a general engineering, procurement and construction contractor to deliver on their behalf complex turnkey plants and system solutions for thermal and biological WtE recovery, gas upgrading and power to gas. We also offer comprehensive, expert and reliable after-sales services for operators of existing plants. Quality is our greatest asset. Our unconditional endeavours to achieve this quality, together with our long experience and honest commitment, are what we pass on to clients.

The challenge of finding the best possible solutions for our clients, again and again, is what drives us. We work with them closely to discover and develop integrated solutions to their individual needs and requirements – solutions based on a blend of proven technologies and passionate innovation that meet the highest quality, efficiency and environmental protection standards. This is why we're among the market leaders in our field: We love what we do.

Kanadevia INOVA

Source separation and landfill versus Waste to Energy

Source separated waste	Method	Products	Residuals / Pollutants
Organics such as: Green Organics (GO), Food Organics (FO), and Food organics & Green Organics (FOGO)	Composting Anaerobic Digestion	Compost Biogas, compost and liquid fertiliser	0.5% (GO only) to 10% contamination (FOGO)
Recyclables such as: Paper & cardboard, Metals (ferrous & non-ferrous), Glass, and Plastics (PE, PET, PP PVC, PS etc)	Material separation	Paper & cardboard Ferrous and non-ferrous metal fractions Glass Plastic fractions such as PE, PET, PP PVC, PS etc, and mixed	5 to 25% contamination
Residual waste to landfill	Landfill (in French more appropriately called "stockage de dechet", because it only stores and doesn't treat the waste)	Uncaptured landfill gas Untreated flue gas from flare or electricity & untreated flue gas from power plant Leachate (no long-term assurity beyond 50 years)	Greenhouse gas Emissions from flare or power plant as well as significant quantities of uncaptured landfill gas = greenhouse gas Less active landfill after 50 to 100 years as long-term liability for our grandchildren
Residual waste to WtE	Waste to Energy	Clean air Steam, electricity, hot water Metals Aggregate Treated Air Pollution Control residue (APCr) Sanitises waste to all of the above	From climate-neutral to climate-negative

In summary, WtE closes the loop of the circular economy, WtE hygienises waste, reduces methane emissions from landfills, recovers energy (50% renewable), and recovers valuable secondary raw materials including critical minerals and metals that further support circularity.

KVI's reference plants include the following recent projects in Europe, the Middle East and Australia (References - Kanadevia Inova):

Kanadevia INOVA

KVI is also leading the carbon capture from Waste to Energy. After the successful implementation of Carbon Capture technology at two pilot projects at Ferrybridge and Rookery South, Kanadevia Inova is designing and building a full-scale decarbonisation project for its long-term clients Encyclis at Protos Energy Recovery Facility.

Our facilities are safe – regardless if built in city centres or regional areas. If anything, most Waste to Energy plants are built in or close to large population centres to minimise transport of waste and in return energy back to the community.

As the engineering, procurement and construction contractor, Kanadevia Inova will use its amine scrubbing technology to capture and collect around 370,000 tonnes of carbon dioxide (CO_2) each year from one of the UK's newest waste-to-energy (WtE) facilities. This major decarbonisation project will see this cutting-edge technology integrated into the operational plant, marking the beginning of a new era of carbon capture for the growing UK market. [CCS: Kanadevia Inova to build UK's first full-scale carbon capture facility | WMW]

Kanadevia INOVA

(a) the performance of the technologies proposed for the Tarago and Parkes Energy Recovery Facilities as compared to leading thermal technologies employed in "state of the art" facilities internationally, noting such technologies as proposed are not employed anywhere else on the Eastern seaboard

The safety of Waste to Energy has on 23 October 2025 been recognised by the NSW EPA: Energy from waste in NSW | EPA

- "One of the community's biggest concerns about energy from waste is potential risks from pollutants in air emissions.
- Modern energy from waste is very different to older waste incineration technology and cannot be compared. Technologies for combusting waste and controlling air emissions have significantly changed and improved as better controls and improved monitoring have been developed.
- The European Union's 2010 Industrial Emissions Directive (IED) and the 2019 Best Available Techniques Reference Document (BREF) for waste incineration set energy from waste emission limit standards that align with best available practices and technologies in Europe.
- These EU standards are comparable with NSW Clean Air Regulation Group 6 air emission criteria and are the reference for the EPA's environmental protection conditions for energy from waste facilities in NSW.
- The NSW Energy from Waste Framework aligns with global best practice."

The performance of any plant built in NSW and anywhere else on the Eastern Seaboard will be BAT (Best Available Technology) as defined by European WID and BREF. Recent examples have been shown above and many more are in construction by KVI and others.

Kanadevia INOVA

Waste to Energy is here to stay because residual waste will be staying with us as a result of the ever increasing entropy in the world (compare “entropy” as one of the basic thermodynamic laws describing the real world). Entropy - Wikipedia

ESWET describes the challenge as follows in its 2050 Vision ESWET_Vision2050.pdf :

- “Waste management is a crucial topic for the sustainable development of our society. Globally, waste generation is expected to grow by roughly 60% by 2050. That’s why the acknowledgement and cooperation of all parties involved – politics, research, technology providers, plant operators, policy makers and civil society – is essential towards the common good for the environment.”

This paper is excellent reading for any Waste to Energy novice and tackles issues such as:

- Waste generation and waste management - projections for 2050
- How to solve global waste challenges?
- Waste-to-Energy: closing the loop with energy and material recovery
- Waste-to-Energy: a global carbon sink for the waste sector
- The future of Waste-to-Energy plants
- Policy recommendations

(b) the spread of the emissions predicted and the quality of emissions to be generated

Every Waste to Energy project has to build up an air dispersion model to demonstrate full compliance with state and federal air quality requirements. The model will take into account prevailing winds, topography, worst-case weather scenarios etc. This fact is another significant advantage of waste to energy over landfilling. Air emissions are generated from one source (the stack) and are continuously monitored throught the projects life. Landfilling is a biological reactor spanning up to 20 hectares of land. Emissions are generated across the whole site, even when waste cells are capped. It is impossible to measure the emissions from a landfill accurately or predict their impact.

(c) health impacts from currently operating older technology waste incinerators as compared to the proposed newer technology

There are no waste incinerators any more in operation in NSW. The Woollahra incinerator shut down many year ago.

- Europe tightened standards over the years, e.g. introduction of boilerfly ash filtering, injection of chemicals such as ammonia for nitrous oxide control,
- $CaOH_2$ for HCl and SO_2/SO_3 control
- activated carbon for heavy metals, PCBs/Dioxines, PFAS

ESWET compiled studies and findings in response to claims regarding pollution from WtE ESWET-studies-and-findings-in-response-to-claims-regarding-pollution-from-WtE-July-2025.pdf

ESWET explains Setting the record straight about Waste-to-Energy - ESWET - European Suppliers of Waste to Energy Technology :

- According to the European Environment Agency and the European Commission’s Joint Research Centre, modern WtE plants operate under the world’s strictest emission standards, with continuous monitoring and public reporting.

Kanadevia INOVA

- Peer-reviewed studies confirm that emissions of dioxins, heavy metals, and particulates from compliant WtE plants are negligible and pose no measurable health risk to nearby communities.
- The World Health Organisation and European academics have repeatedly found no evidence of increased cancer or respiratory disease near modern WtE facilities.
- A detailed evidence review by the UK Health Security Agency updated as of 9 June 2025 concludes that "modern, well run and regulated municipal waste incinerators are not a significant risk to public health".

(d) impacts on human health including on regional town drinking water, rainwater harvesting and soil contamination

Modern WtE facilities operate under the Industrial Emissions Directive and the WI BREF, ensuring continuous emissions monitoring and compliance with some of the world's most stringent environmental thresholds.

Again, ESWET compiled studies and findings in response to claims regarding pollution from WtE ESWET-studies-and-findings-in-response-to-claims-regarding-pollution-from-WtE-July-2025.pdf

"Key scientific and regulatory facts in favour of WtE

- Dioxin Reality Check: WtE contributes <0.2% of total industrial dioxin emissions in Europe (EEA, 2021). Traffic, households, and other sectors are significantly larger contributors.
- Emission Control: WtE plants operate under the Industrial Emissions Directive (IED) and BAT conclusions, with 24/7 monitoring and strict limits even during startup/shutdown phases.
- Stack Emissions ≠ Local Pollution: Studies in France, Italy, Portugal, the Czech Republic, and others consistently found no correlation between stack emissions and dioxins in the surrounding environment."

Each project in NSW and anywhere else in the world will undertake a site-specific human health risk assessment.

And what is the alternative? - Landfilling has a much higher risk of groundwater and soil contamination (liners split, flooding, wind-swept waste, etc.) over a large area as the waste of decades is stockpiled and slowly rots over many hectares of land. In comparison, Waste to Energy only has a small waste bunker, is fully concreted and contains at best ten days of waste storage.

(e) the impact on agriculture locally and across the wider region

The air dispersion modelling predicts ground-level concentrations of emissions coming from the stack. There will be no impact.

In the absence of a fact-finding tour by the Select Committee, we present an example of the Renergia Waste to Energy in harmony with the nearby farming and population. Bilder & Filme

Kanadevia INOVA

Copyright with Renergia WtE

(f) alterations to the Parkes Special Activation Precinct specifically in relation to the proposed Energy Recovery Facility in that region

The Parkes WtE project has the potential to supply not only electricity, but also steam and hot water directly to industries in the Parkes Special Activation Precinct. The development of precincts using WtE as the catalyst for symbiotic industries is a significant opportunity. Energy prices are a major disincentive for Australian manufacturing and WtE provides an opportunity to deliver behind the grid energy to co-located industries in the form of steam or behind the meter electricity,

(g) impacts of waste-dumping over a number of decades in the Tarago region

The effects of waste dumping are a prime example of why Waste to Energy is superior to landfilling. The community impacts of the Woodlawn facility are well documented. WtE addresses these community impacts in almost every aspect (leachate, odour, vermin, air and ground contamination, greenhouse gas impact, energy production, recycled materials etc).

(h) the methodology of emission monitoring employed by leading large scale waste-to-energy facilities in Australia and across the world

All WtE plants have to use Continuous Emission Measurement (CEMS) with one system per line and one on stand-by at all times. The data is released in line with the particular licence requirements. Authorities can access the stack at all times to measure independently. Emissions analysing probes in the CEMS system are calibrated using industrial gases

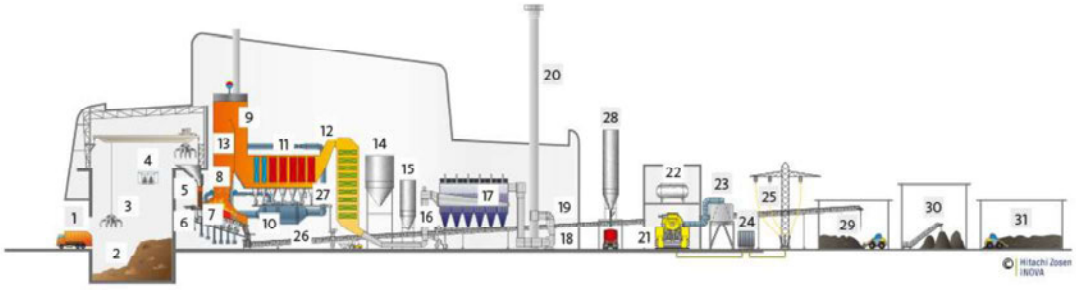
Kanadevia INOVA

stored at the base of the stack. This method ensures that the probes provide an accurate reading day after day.

Waste to Energy (WtE) is the state-of-the art approach to the treatment of residual solid waste. In addition to the energy recovery component that gives the process its name, it also includes the effective combustion of the waste, a powerful waste gas purification system, and the recovery of valuable materials from the residual materials.

The example below shows the Dubai WtE cross-section.

Dubai / United Arab Emirates



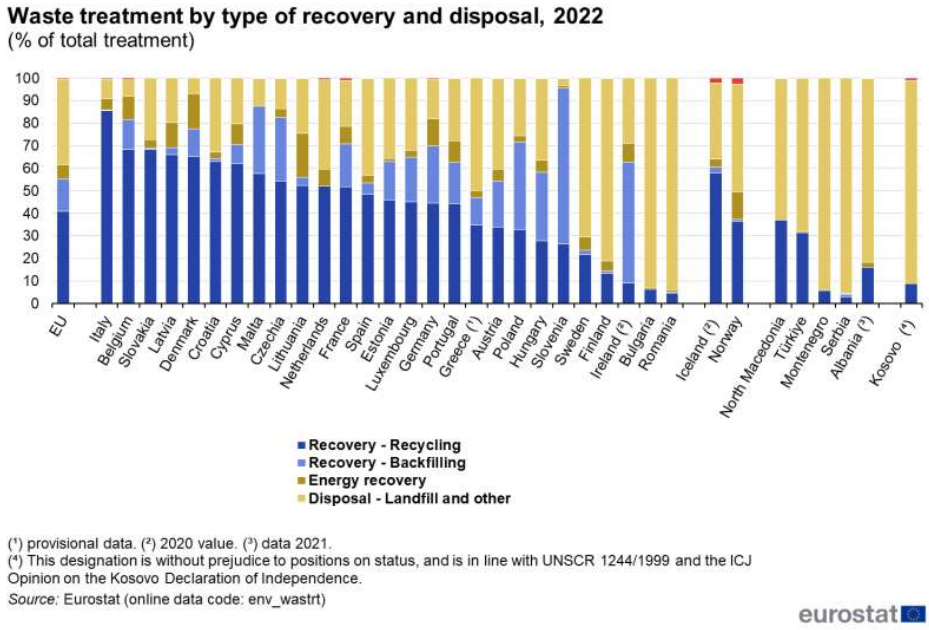
Waste Delivery and Storage	Combustion and Boiler	Flue Gas Treatment	Energy Recovery	Residue Handling and Treatment
1 Tipping area	5 Feed hopper	13 SNCR DyNOR	21 Steam turbine	26 Bottom ash extractor
2 Waste bunker	6 Ram feeder	14 Lime slaker	22 Feed water tank	27 Boiler ash discharge
3 Waste crane	7 HZI Grate	15 Additive silo (lime)	23 Air cooled condenser	28 Residue silos
4 Control room	8 Secondary air	16 XeroSorp® (dry sorption)	24 Transformer	29 Bottom ash pre-storage area
	9 Four-pass boiler	17 Fabric filter	25 Electrical power generation	30 Bottom ash treatment plant
	10 Primary air	18 Induced draught fan		31 Maturation area
	11 Superheater	19 Silencer		
	12 Economiser	20 Stack		

In a modern WtE plant, municipal solid waste is delivered to the site and stored in a bunker. A crane thoroughly mixes and feeds the waste into the feed hopper. From there it is pushed onto the grate by a ram feeder. A fully integrated control system ensures stable and efficient operation and optimises the fire position on the grate. Once combustion is complete, the inert ash that remains falls into the bottom ash extractor, from where it can be taken to a

bunker or storage area for metals recovery and further use. The gases released from the waste are mixed with secondary air and recirculated flue gases above the grate. This assures complete combustion and the lowest CO, NOx and VOC emissions. Recirculation of flue gases also increases the plant's energy efficiency. The energy released is used to produce superheated steam, which is expanded in a turbine generator to generate electricity. Flue gases are then cleaned to the strictest standards, and are continuously monitored before being released at the stack.

(i) alternative solutions to reduce and manage residual waste produced by Greater Sydney, and

Eurostat data consistently show that countries with the highest recycling rates also maintain advanced WtE capacities. The two processes serve distinct but interconnected functions within the waste hierarchy. WtE treats the residual fraction that remains after prevention, reuse, and recycling efforts — typically contaminated, composite, or otherwise non-recyclable waste. File:F6 Waste treatment by type of recovery and disposal, 2022 (% of total treatment).png - Statistics Explained - Eurostat



(j) any other related matters.

Landfilling leaves a long-term environmental liability for the next generation to inherit and deal with.

Waste to Energy is safe – be it in cities or regions.

Ironically, every time a landfill had to be remediated, most material ended up in a Waste to Energy plant!

Waste-to-energy does not leave long-term environmental impacts, and at the end of their operational life, they can be demolished. Typically, plants are rebuilt after 25 to 30 years at the exact location, with many examples worldwide.

Kanadevia INOVA

Waste-to-Energy enables up to 100% recovery of materials for reuse, supporting the circular economy. When residual waste is landfilled, this opportunity is lost.

Waste to Energy is one of the most strictly controlled industrial operations, and hence monitors and publishes vast amounts of data with full mass and energy balances, 24/7 stack emission data.

The WtE discussion should be fact-based and take a life-cycle perspective to design policies that reduce overall emissions while ensuring that every tonne of residual waste is managed responsibly and efficiently.

The bad apple (landfill) will continue to spew greenhouse gases not only when landfilled but 50 to 100 years into the future. New landfills or the extension of existing ones would be a failure and misaligned with the NSW Greenhouse initiatives.

Gaining a social licence is not only the task of a developer fighting against NIMBY (Not In My Back Yard), but also of politics and regulators to enable WtE.

We welcome the recent acknowledgements by the NSW Government, the NSW Chief Scientist, and the NSW EPA that WtE is safe, an essential element of waste management, and an important part of the circular economy.

The landfill levy as a driver, is still too low to drive circularity to its fullest. We recommend uplifting it to $300/t (equivalent to the UK one). In addition, we must add another $100/t for the high civil and installation & erection costs in Australia.

Products from Waste to Energy should be reintroduced into the economy (to make it circular). Hence, it requires regulatory pathways that are today not yet opened, but are required.

If the Best Available Technology for NSW is WtE residues (aggregate from bottom ash and carbonated APCR) going to landfill, then it is absurd to levy them. Hence, they should be exempt from the landfill levy or pathways to their reuse established together with the industry.

Sustainable thinking supports treating residual waste close to its generation. Hence, WtE precincts are a particularity of NSW. They come at a political and financial cost to every household and industry due to the required waste transfer stations and transport to regional centres.

We trust that the information provided is helpful. If needed, we are available to address any queries or clarifications you may have.

Kind regards

Kanadevia Inova Australia Pty Ltd

Amal Jugdeo Sales Manager	Dr Marc Stammbach Advisor	Jason Pugh Managing Director/ Country President