

# Ensure sustainable consumption and production patterns

## TEACHING AND STUDENTS

### Food Co Op

The Food Coop is a student-run, non-profit cooperative based at the University selling organic, fair-trade, and sustainably sourced food at prices affordable for all. Weekly stalls are held, during which students raise awareness and promote discussions about modes of production and consumption that are more environmentally friendly and that respond to social issues.



### Metalmann

Metalmann received funding from the Student Enterprise Fund. It has a vision to democratise the complex non-ferrous metals recycling industry, empowering scrap yards and recyclers with unparalleled reach so the global potential of metal recycling can be achieved. As demand for industrial metals rises, it's critical to harness their infinite recyclability, ensuring 'responsible production'. However, only 30% products are currently manufactured from secondary-metal.

Metalmann is a transformative, B2B platform using advanced digital-technology to bring scrap-yards and recyclers together, without any intermediaries, so they can trade efficiently, across the world. Within a year launching, 500 aluminium companies from 20 countries trade on Metalmann and it was promoted in the prestigious conventions of the Bureau of International Recycling (Europe), Institute of Scrap Recycling Industries (USA) and Metal Recycling Association of India.

## RESEARCH

### WCIBB

Researchers at the Warwick Centre for Biotechnology and Biorefining (WCIBB) are involved in the conversion of renewable plant biomass into high-value chemicals and materials for manufacturing. Prof Tim Bugg's research group (funded by BBSRC and EU) are using novel lignin-degrading bacteria and enzymes to convert the aromatic polymer lignin into aromatic chemicals, for example a pyridine-dicarboxylic acid that is a component of new bio-based plastics in collaboration with Biome Bioplastics Ltd. Prof Kerry Kirwan's research group (funded by EPSRC) are developing new biocomposites from agricultural waste and recycled carbon fibre to use in manufacturing. Dr Guy Barker's research group is using brown rot fungus *Serpula lachrymans* for biotransformation of tropical agricultural biomass, in collaboration with research groups in Indonesia.

### MINRESCUE

The MINRESCUE project aims to develop innovative concepts for managing, recycling and upcycling waste geomaterials generated by past and current coal mining activities across Europe.

The core objective of the project is to develop effective strategies to use coal waste as a constituent in sustainable construction materials and products. With significant money saving and environmental footprint reduction, MINRESCUE will substantially contribute to the establishment of a circular economy, particularly in coal mining areas. The project involves a consortium of researchers and practitioners from the University and different institutions across Europe, including the UK, Poland, France, Italy, Spain and Ukraine.

### Circular Economy Researchers Network

The Circular Economy Researchers Network at Warwick aims to support the transition to a circular economy. It helps to facilitate networking and the sharing of ideas between researchers working on the circular economy across different faculties. The network has held external and internal speaker events, discussion forums on circular economy and is currently completing a baseline analysis of the circularity of the University of Warwick.

### Reuse of Nissan LEAF batteries

Once EV batteries have fulfilled their life-span for automotive applications, they are usually recycled by the manufacturer. However many automotive Lithium-ion batteries have enough life left in them after the car is scrapped for 'second-life' uses both domestically and industrially. To do this, it is necessary to "grade" the used batteries - identifying those suitable for use as spare parts, second life, and recycling. This grading process is traditionally a long and expensive process.



Part-funded by the Department for Business, Energy and Industrial Strategy, the UK Energy Storage Laboratory project was launched, where 50 Nissan LEAF batteries were used to develop the existing grading process led by Nissan, WMG at the University of Warwick, AMETEK and Element Energy. WMG's battery technology experts in the Energy Innovation Centre developed a safe, robust and fast methodology for used automotive Lithium-ion batteries. In addition, the team developed ways of grading modules, the sub-components of battery packs, in as little as 3 minutes.

### Extracting the powers of fly larvae in South Africa GCRF

Chitin is a naturally occurring biopolymer, it can be found in the exoskeleton of insects. The larvae are high in fats and protein and are used as a source of animal feed. However, whilst the larvae are an excellent protein source for animal feed, animals find them difficult to digest, and the husks are shed by the larvae, which is where most of the chitin can be found. The larvae need to be removed from the feed as a waste product.



Methods of extracting chitin do exist, but they are chemical- and energy-intensive, and produce waste. A group of researchers at the University undertook a project researching less resource-intensive methods of chitin extraction, with lower chemical and energy use and a potential reduction in the scale and hazard of waste in future. The project was a collaboration with the South African waste management company Aegis Environmental.

## OPERATIONS

### Pay as you feel



During Arrivals Week 2019 the University held its first 'Pay as you Feel' event. The Energy and Sustainability Team, alongside student volunteers, sold items that had been collected during the RAWKUS collections at the end of the summer term.

New and returning students had the opportunity to buy a variety of items from pots and pans to cutlery and utensils, and from clothing to clothes airers. There was a lot of support and enthusiasm for the event, which raised more than £3,500 for local charity, Action 21.

### Campus & Commercial Services Group

All water bottles delivered through Warwick Food and Drink are non-plastic and reusable, saving 30,000 previously purchased bottles per year from disposal.

## PUBLIC ENGAGEMENT

### reStore café

Warwick Environment and Sustainability team and the School of Engineering Build Space held the first reStore cafe in 2019. The



regular events are an informal get together for people to take, repair and upcycle anything from electrical and mechanical devices to bicycles and clothing. Tools and equipment are provided as is the help of some expert repairers and makers. Sometimes a very simple repair is all that is needed to fix a broken or damaged item, saving it from going to landfill and reducing environmental costs. The act of repairing or upcycling extends a product's useable life, reduces waste and pollution, and saves energy, carbon emissions and finite non-renewable resources.

### Project Baala

A project created by Warwick students. This is impact-oriented, youth led organization committed to making menstruation a non-issue in India. Baala (meaning young girl in Hindi) aims to tackle the main problem about female menstrual hygiene recognized in India: the expense of modern sanitary products, problem of disposal, complete lack of awareness and information and the social taboos surrounding menstruation.

