

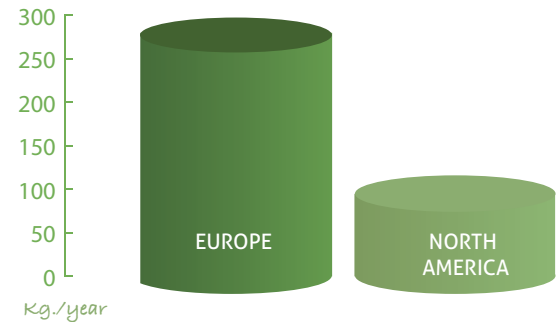


*Sustainable Production
of Functional and Safe
Feed from Food Waste*

Background

Food processing activities in Europe produce large amounts of by-products and wastes. Roughly one third of the food produced in the world for human consumption every year (approximately 1.3 billion Tn) gets lost or wasted, according to a FAO-commissioned study.

Fruits (16.4%) and vegetables (25.8%), have the highest wastage rates of any food.



Food loss and waste generated per capita in Europe and North America

Such waste streams are only partially valorized. Food loss and waste also amount to a major squandering of resources, including water, land, energy, labor and capital and needlessly produce greenhouse gas emissions, contributing to global warming and climate change.

NOSHAN was launched in the summer of 2012 to develop process and technologies needed to use food waste for feed production at low cost, low energy consumption and with maximal valorization of starting wastes materials.

Brief summary

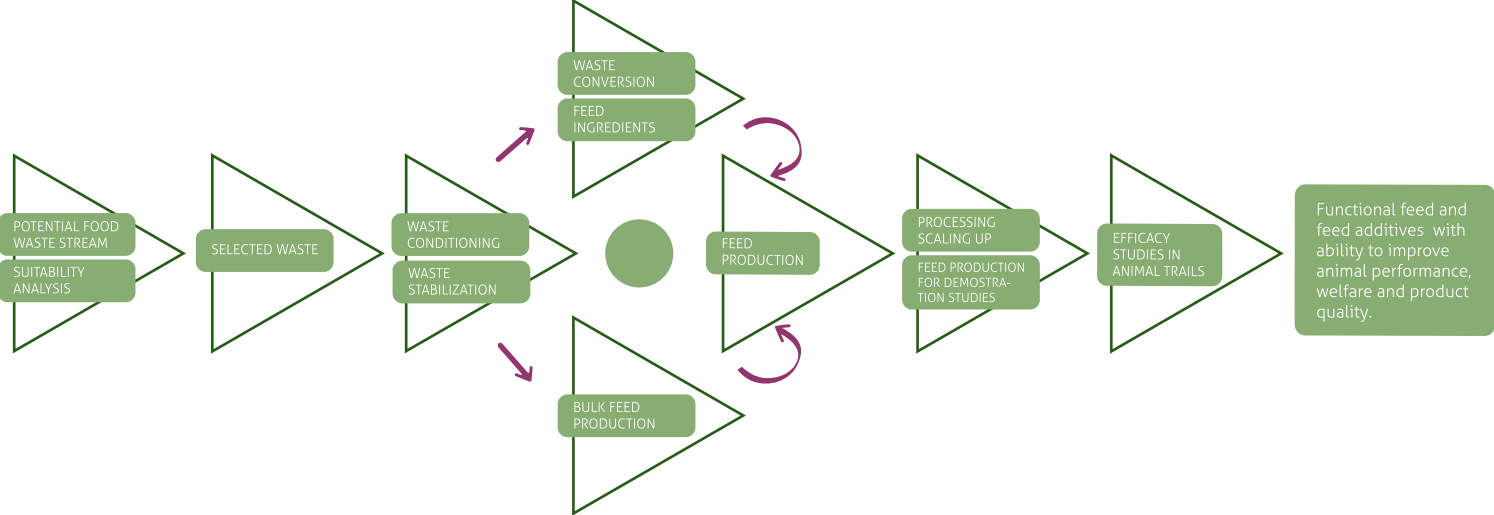
The main focus of NOSHAN is to address the process and technologies needed to use food waste for feed and feed additives production at low cost, low energy consumption with maximal valorisation of starting wastes materials.

Nutritional value and functionality according to animal needs as well as safety and quality issues are investigated and addressed as main leading factors for the feed production using food derived waste (fruit/vegetable/plant and dairy).

Not only wastes are characterized for their nutritional potential, but also suitable technologies to stabilize them and convert them into suitable raw materials for bulk feed are investigated. Obtaining functional feed ingredients (additives) from these wastes are also targeted as it is an important factor determining final feed cost and functionality in animals.

All initiatives will be validated in *in vitro* and *in vivo* tests to the final animal derived products intended for human consumption. Therefore, a whole value chain from starting raw materials to exploitable products and technologies will be covered and monitored via LCA, and with further validation using the novel European Technology Validation platform.

Overview of NOSHAN´ s approach



Project Targets

1. A guide with main food derived wastes (fruit/vegetable/plant and dairy) and their characterisation and their suitability for feed production.
 2. Identification of a conditioning technology for each waste or mixture.
 3. Obtaining feed compositions suitable for target animals (weaning piglets and poultry).
 4. Obtaining functional compounds for feed related to fibre, protein and bioactives valorisation from wastes.
 5. Validate the process scale-up for feed products and their efficacy in *in vivo* animals trials.
 6. Technical, economical and environmental validation of the proposed processes, products and feed compositions.
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A double fold strategy will be followed.



• *Replacement of bulk feed ingredients will be studied from the starting waste materials to cope part of the huge amounts of food waste generated in Europe.*



• *Valorisation of the latter constitutes as well as the upgrade of waste into more valuable feed additives to cope with animal needs and improve feed price.*

Impact

NOSHAN's outcome will have a huge impact with several dimensions by means of developing cost-effective technologies for safe feed and functional feed ingredients production overcoming current technological, environmental and regulatory constraints towards the implementation of an eco-efficient and novel food waste processing.

NOSHAN will have a direct impact on the environmental field by means of:

➤ *• Reducing the quantity of organic waste to be disposed*

➤ *• Re-using products; increasing food waste to be recycled; and indirect environmental impacts by means of:*

- Reducing GHG emissions by applying novel low energetic technologies, less energetic demanding and reducing the impact of disposed food waste*
 - Reducing the adverse impacts of the generated waste on the environment and human health*
 - Increasing the efficiency (economic & ecologic) of the production at arable lands*
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The transformation of fruit, vegetables, roots and dairy derivatives into animal feed and feed additives through cost-effective tools is the conceptual approach of the proposed project.. NOSHAN will have an industrial and economic impact due to the integration of innovative conditioning and production technologies foreseeing a clear reduction of:

➤ *• Energy consumption, raw materials inputs and water usage in the whole feed chain*

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