Towards a holistic approach for Sustainable Development for the space sector

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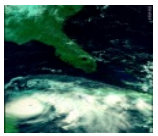
European Space Agency

ESA's holistic approach to SD

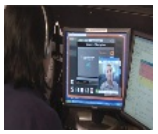
Space for SD on Earth

Resource management

Meteorology / Climate change monitoring



Disasters management



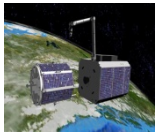
Telecommunications / Telemedicine
Telehealth /Telelearning

Navigation and positioning

ESA & SD

SD in space

Space debris mitigation



Space debris remediation / removal

Codes of conduct for
space operations /
Space traffic management

SD in the space sector

Responsible use of energy /
Care for the environment
at space sector sites

Use of hazardous goods

Good management and
social responsibility

Transfer of
space technologies for
SD innovation and products

Ecodesign and
Life Cycle Assessment

ESA Sustainable Development 2009-2010 report

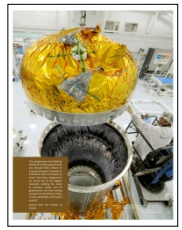
Governance and ethics of space

Space programmes contributing to a sustainable society

Managing our environment responsibly

ESA Sustainable Development Report 2009–10

Relations with partners and suppliers



Human Resources and social responsibility

European Space Agency

Actions ahead

- Anchoring Sustainable Development in the corporate strategies of all actors in the space sector (agencies, research establishments, industry)
- Development of shared Key Performance Indicators and associated goals
- Joint approach to dealing with relevant regulations (REACH, RoHSS)
- Establishment of Environmental Management Systems in the sector (e.g. certifications ISO 14001, BREEAM)
- Support to SD relevant programmes (e.g. Clean Space initiative prepared for ESA's Council on Ministerial Level 2012)

- Presenting the European sector in relevant global organs promoting the use of space applications for SD (e.g. Rio +20)
- Further developing of SD in space through space debris mitigation and remediation as well as space traffic management (e.g. in UNCOPUOS, ITU or ICAO)

- Introducing of an SD related award under the patronage of the European Interparliamentary Space Conference (EISC)

One concrete example for SD technology transfer and innovation from space: The MELiSSA Project

MELiSSA (Micro-Ecological Life Support System Alternative) has been conceived as a tool to gain understanding of the behaviour of artificial ecosystems, and for the development of the technology for a future regenerative life support system for long term human space missions - for example: a lunar base or a mission to Mars.

The driving element of MELiSSA is the recovering of food, water and oxygen from waste, carbon dioxide and minerals.

MELiSSA goes further than other recycling systems used on the International Space Station, which purify water and recycle exhaled carbon dioxide but do not attempt to recycle organic waste for food production.

MELiSSA technology can also be used in daily on-Earth issues, such as site mangement and water recycling. In order to reduce water consumption and pollution with untreated water evacuation, dark and brown waters can be treated and re-used in gardenning, toilets and bathrooms, for example.