

- 10:00 – 10:05** Welcome – dr Jan Skowronek - IETU Director
- 10:05 – 10:15** *Introduction to the Phyto2Energy project* - Izabela Ratman-Kłosińska, IETU - Project Coordinator
- 10:15 – 10:30** *Possibility of using energy crops for phytoremediation of heavy metals contaminated lands – three years experiences*
dr Marta Pogrzeba, IETU – WP1 Leader
- 10:30 – 10:45** *Technical and economic aspects of field demonstration* - Kathrin Kopsielsky, Vita34 BioPlanta – WP1 Fellow
- 10:45 – 11:00** *The new bioinoculum: some aspects of development and evaluation* - dr Szymon Powalowski, Probiotics Polska -WP2 Fellow;
prof Grażyna Płaza, IETU – WP2 Leader
- 11:00 – 11:15** *Microbial response to heavy metals in rhizocompartments of Miscanthus x giganteus* - Urska Zadel, HMGU - WP2 Fellow
- 11:15 – 11:30** Coffee break
- 11:30 – 11:45** *Gasification process improvements, management and dissemination aspects* – dr Sebastian Werle, SUT – WP3 Leader
- 11:45 – 12:00** *Lab test and FTIR analysis* - Cristina Tomescu, ISPE – WP3 Fellow
- 12:00 – 12:15** *TG analysis* - Cristina Tomescu, ISPE – WP3 Fellow
- 12:15 – 12:30** *Fixed bed gasification and CBA (including environmental analysis)* - dr Valentin Rusu, ISPE – WP3 Fellow
- 12:30 – 12:45** Q&A
- 12:45 – 14:00** Light Lunch



Phyto2Energy Project Introduction

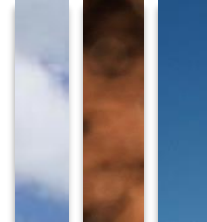
Izabela Ratman-Kłosińska
Project Coordinator

PHYTO2ENERGY

**Phytoremediation driven energy crops
production on heavy metal degraded areas as
local energy carrier**



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 610797.



Energy crops

**Contaminated
land management**

**biomass
production**

Phytoremediation

- ➔ About 800 thousand km² of soils in Europe are considered polluted or potentially polluted in that 30% with heavy metals
- ➔ Some typical energy crop species demonstrate promising potential not only as biomass yield but for heavy metal removal
- ➔ About 10% of arable land in Poland is left idle or not used for agricultural purposes
- ➔ Adopting the properties of some energy crops with phytoextraction or phytostabilisation purposes may deliver a positive value in terms of environmental and economic benefits

Some facts about the project

- Acronym: **Phyto2Energy**
- Funding scheme:
Industry Academia Partnerships and Pathways under Maria Skłodowska Curie Actions of the 7FP
- Start up date: **1 Feb 2014**
- Duration : **48 months**

Consortium of 6 partners

R&D

IETU **POLITECHNIKA ŚLĄSKA** **HelmholtzZentrum münchen**
Deutsches Forschungszentrum für Gesundheit und Umwelt



Industry

IFPE **VITA34** **BioPlanta** **ProBiotics**
Polska



IAPP: a two-fold objective

Scientific and technological goal



- to develop and validate a novel approach to biomass production on heavy metal contaminated (HMC) sites, ensuring:
 - its environmentally safe use for energy purposes
 - a simultaneous improvement of soil quality and functions of the sites by phytoremediation

Transfer of knowledge goal



- strengthen the cooperation between industry and academia to make advancement in knowledge and arrive to promising near-to-market innovations addressing the S&T goal

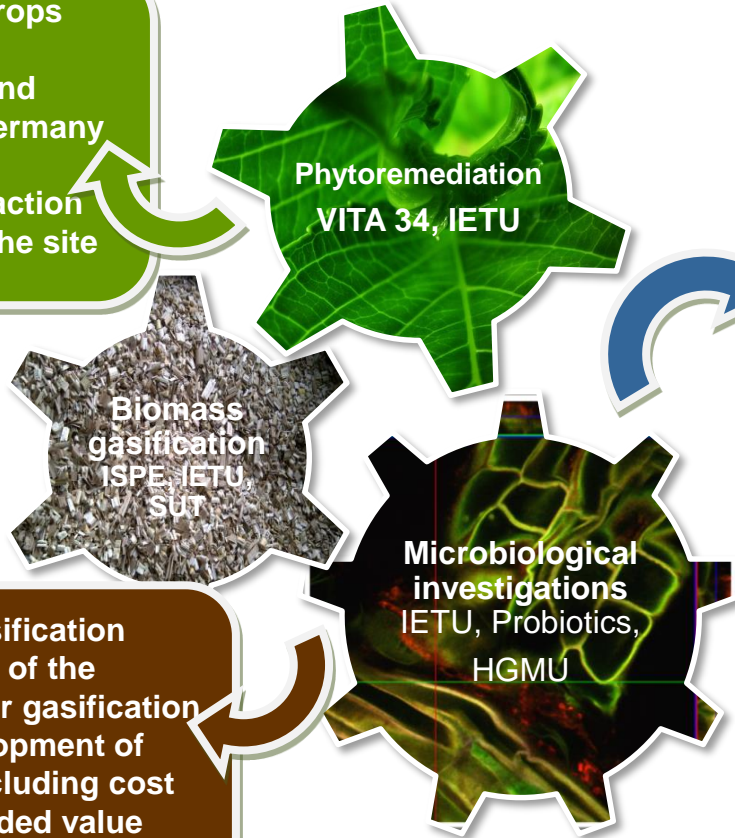
Project objectives and transfer of knowledge

S&T Objective 1

Testing and evaluation of 4 energy crops *Miscanthus x giganteus*, *Sida hermaphrodita*, *Spartina pectinata* and *Panicum virgatum* in Poland and Germany to choose optimal ones for biomass production combined with photoextraction or phytostabilisation depending on the site development goal

S&T Objective 3

Investigation of the HMC biomass gasification process to determine key parameters of the biomass as biofuel, assess options for gasification end products management and development of guidance for process optimisation including cost benefit analysis and environmental added value assessment




S&T Objective 2

identification of plant growth promoting rhizobacteria, bacterial endophytes to develop a microbiological method stimulating plants growth

IAPP projects under Maria Skłodowska Curie Actions are implemented based on:

- exchange of staff between industrial and research partners (secondments)
- recruitment of scientists by research partners
- transfer of knowledge between industry that performs research to develop innovations for own development purpose and research organisations (mutual learning to achieve the goal)



108,45 PMs
64,45 PMs to Academia
44 PMs to Industry



Secondments to IETU:

ISPE - IETU 4 PMs
 Probiotics-IETU 9,45 PMs
 Vita34 - IETU 12 PMs

➔ 25,45 PMs

Secondments to Probiotics:

HMGU - Probiotics 4 PMs
 IETU - Probiotics 10 PMs

➔ 14 PMs

Secondments to Vita34:

IETU - Vita34 20 PMs

➔ 20 PMs

Secondments to SUT:

ISPE - SUT 8 PMs

➔ 8 PMs

Secondments to ISPE:

SUT-ISPE 4 PMs
 IETU - ISPE 6 PMs

➔ 10 PMs

Secondments to HMGU:

Probiotics - HMGU 7 PMs

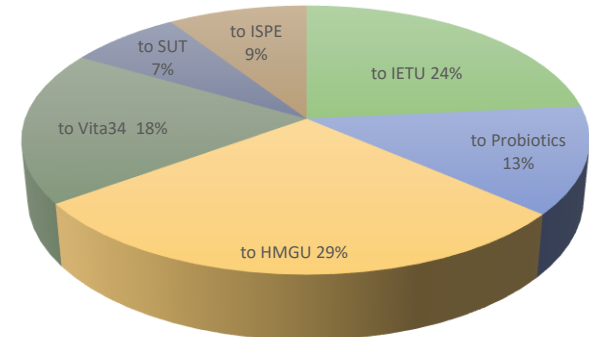
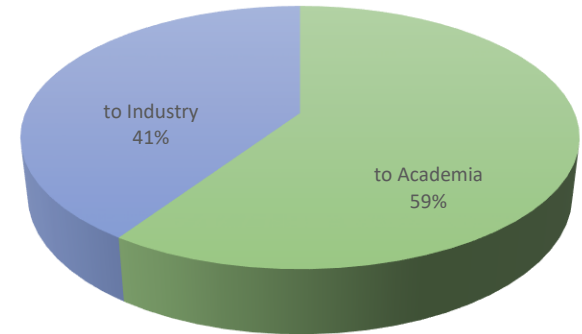
➔ 7 PMs

Recruitment to HMGU:

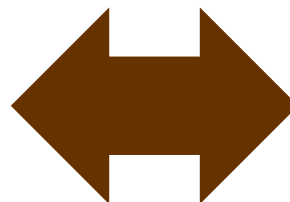
HMGU 24 PMs

➔ 24 PMs

108,45 PMs in total



IAPP (RISE under H2020) projects create an opportunity particularly for early stage researchers as well as experienced researchers interested to understand the ways research is done for the needs of industry and for developing their scientific carriers



For industry IAPP (RISE) is an opportunity to work together with scientists and get access to scientific infrastructure for achieving quality research results useful to the business and development practices of enterprises

26 Fellows: 12 ER | 14 ESR

| | | |
|------|-------------------|------------|
| ER1 | Grażyna Płaza | IETU |
| ER2 | Marta Pogrzeba | IETU |
| ER3 | Jacek Krzyżak | IETU |
| ER4 | Irena Biedroń | IETU |
| ER5 | Daniel Bisorca | ISPE |
| ER5 | Valentin Rusu | ISPE |
| ER6 | Iuliana Cardasol | ISPE |
| ER7 | Anja Hebner | VITA34 |
| ER8 | Gisle Vestergaard | HMGU |
| ER8 | Joseph Nesme | HMGU |
| ER9 | Szymon Powalowski | ProBiotics |
| ER10 | Sebastian Werle | SUT |

| | | |
|------|---------------------|------------|
| ESR1 | Ewa Błaszcyk | IETU |
| ESR1 | Joanna Chojniak | IETU |
| ESR2 | Alexandru Rugiubei | ISPE |
| ESR2 | Andreas A. Pahopol | ISPE |
| ESR2 | Cristina Tomescu | ISPE |
| ESR3 | Ioana Cristina Dima | ISPE |
| ESR4 | Kristina Ziegler | VITA34 |
| ESR4 | Kathrin Kopielski | VITA34 |
| ESR5 | Thomas Fricke | VITA34 |
| ESR5 | Swantje Prah | VITA34 |
| ESR6 | Urska Zadel | HMGU |
| ESR7 | Barbara Cania | ProBiotics |
| ESR7 | Izabela Gebler | ProBiotics |
| ESR8 | Sylvia Kubicka | SUT |

IETU



Prof. Grażyna Pląza



dr Jacek Krzyżak



dr Marta Pogrzeba

Irena Biedroń
dr Ewa Błaszczuk
Joanna Chojniak

HMGU



dr Joseph Nesme



Urska Zadel

Gisle Vestergaard

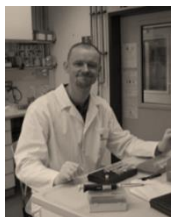
SUT



dr Sebastian Werle

Sylvia Kubicka

Probiotics Polska



dr Szymon Powalowski



Barbara Cania



Izabela Krzysińska

Vita 34 Bioplanta



Anja Hebner



Kathrin Kopielski



Swantje Prah



Thomas Fricke

ISPE



Alexander Pahopol



Daniel Bisorca



dr Valentin Rusu



Cristina Tomescu



Cristina Dima

Iuliana Cardasol

Alexandru Rughubei

Kristina Ziegler

Training and outreach activities



60 trainings and **9 seminars** at host organizations.

45 open seminars were organized by project partners to broad audiences including students of academia.



IETU seminar: A. Hebner -Full-scale remediation of contaminated sludge using plants - investigations, results and experiences, 6.03.2015, Poland



IETU Seminar: ISPE at Phyto2Energy, 20 October 2016



SUT Seminar: Seminar-Phyto2Energy, 18 October 2016, Gliwice



SENAI CIMATEC: Dedicated meeting with environmental team, 18 December 2015 Brasil



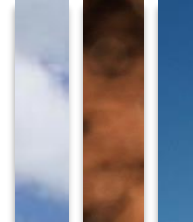
27 conferences and symposiums

40 publications

6 posters

PHYTO2ENERGY AWARDS 2016/2017 FOR:

- **The best oral presentation** - Macroelements and heavy metals content in *Panicum virgatum* cultivated on contaminated soil under different fertilization - Marta POGRZEBA, Jacek KRZYŻAK and Szymon RUSINOWSKI - VII International Scientific Agriculture Symposium "AGROSYM 2016" hold in Bosnia and Herzegovina.
- **1st prize poster** - The influence of different soil fertilisation on arbuscular mycorrhiza colonisation and heavy metals accumulation by *Miscanthus x giganteus* - Alicja SZADABORZYSZKOWSKA, Katarzyna NOWAK, Jacek KRZYŻAK, Szymon RUSINOWSKI, Maciej SOJA, Marta POGRZEBA - National conference "Current Environmental Issues", Poland.
- **1st prize poster** - Assessment of Plant-Associated Bacterial Community of *Miscanthus x giganteus* and its response to metal stress - Urška ZADEL, Joseph NESME, Viviane RADL, Bernhard MICHALKE, Peter SCHRÖDER, Michael SCHLOTTER - International Symposium on Biosorption and Biodegradation/ Bioremediation in Prague



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