

COLLABORATIVE DOCTORAL PARTNERSHIPS – CALL 2020

THEMATIC FIELD 4: Development of methods to monitor progresses, design transformations & identify solutions to achieve SDGs

JRC RESEARCH AREA DESCRIPTION

The dimensions of sustainable development, as spelled out in the United Nations' Sustainable Development Goals (SDGs) framework and their targets, are numerous and diverse; evaluating the potential impacts of each policy on all such dimensions requires a holistic approach, dedicated tools and novel approaches. JRC Directorate D is at the heart of the process to produce, collect and distil knowledge towards policy support for the SDGs, acting at various levels: monitoring and modelling SDGs, identifying potential solutions needed to boost SDGs achievement, assessing policy coherence, synergies and trade-offs between SDGs and targets. Within this CDP, PhD positions are offered to address methodological developments in all the areas mentioned above, supported by core JRC expertise, with specific attention for the Water-Energy-Food-Ecosystem Nexus. The focus is on the following themes:

- Development of appropriate indicators relying on **earth observation and big data** for monitoring of SDGs and advance on environmental and climate science.
- Development of methods and analytical tools to measure and monitor the impacts of **supply chains of human activities** (e.g. agriculture, Bioeconomy, industrial productionsystems, etc.) on environment, climate and ecosystems, including potential synergies and trade-offs towards the achievement of SDGs.
- Design of **transformation pathways** for the EU Bioeconomy to contribute to global SDGs targets.
- Development of tools, solutions and metrics addressing the **Water-Energy-Food-Ecosystems (WEFE) Nexus** Assessments, which at the same time address the related SDG's
- Improving **Economic Modelling** approaches for the assessment of socio-economic and environmental impacts of the EU's sustainable resource initiatives for the achievement of SDGs

MAIN POLICY FIELDS

The UN's [2030 Agenda for Sustainable Development](#) signed in 2015 set out a framework for sustainable development in 2030, including a set of 17 Sustainable Development Goals (SDGs) which cover environmental, economic and social aspects. The EU is committed to implement this agenda, as indicated in the 2016 "[Communication on Next steps for a sustainable European future](#)". Further, the [political guidelines](#) for the new Commission until 2024 reinforce the need for EU policies to focus on delivering the Agenda 2030 objectives and strive for sustainable development.

The dimensions of sustainable development, as spelled out in the UN SDGs and their targets, are numerous and diverse, and refer to areas such as food, water, energy, climate, transport, cities and infrastructure, industries and the overall economy. JRC Directorate D is addressing most of the themes that are spelled out in the individual goals and is at the heart of the process to produce, collect and distil knowledge towards policy support for the SDGs; it is supporting the integration of the SDGs in the EU policy framework and Commission priorities by responding to the evolving knowledge needs, expanding the set of available indicators, developing a strategy how to best support a longer term vision with the focus of sectorial policies after 2020 complemented by tools that are fit for purpose for the Better Regulation package and the Impact Assessment of EU policies in a more systematic way. Key policy areas addressed by the directorate's JRC work and relevant for this call are

- [The European Green Deal](#)
- [2050 Long Term Strategy](#): A Clean Planet for all. A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy
- Other Nexus relevant legislation: the Common Agricultural Policy (CAP), The Water Framework Directive (WFD) and related water directives, and the Energy Union Strategy

LINKS / URL WEBSITES

- <https://eplca.jrc.ec.europa.eu/>
- https://ec.europa.eu/knowledge4policy/bioeconomy_en
- <https://land.copernicus.eu/global/products/lc>
- [https://ec.europa.eu/eurostat/statistics-explained/index.php/LUCAS - Land use and land cover survey](https://ec.europa.eu/eurostat/statistics-explained/index.php/LUCAS_-_Land_use_and_land_cover_survey)
- <https://www.che-project.eu/>
- <https://knowsdgs.jrc.ec.europa.eu/>
- <https://water.jrc.ec.europa.eu/>

LINKS / REFERENCES TO PUBLICATIONS

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- Forzieri, G., Alkama, R., Miralles, D. G. and Cescatti, A.: Satellites reveal contrasting responses of regional climate to the widespread greening of Earth, *Science* (80-.), 356(6343), 1180–1184, doi:10.1126/science.aal1727, 2017.
- Janssens-Maenhout, G., et al.: Towards an operational anthropogenic CO2 emissions monitoring and verification support capacity, accepted for publication in *BAMS*, 2020 forthcoming
- Achard, F., Malheiros de Oliveira, Y.M. & Mollicone, D. (2017). Monitoring forest cover and deforestation. In: J. Delincé (ed.), *Handbook on Remote Sensing for Agricultural Statistics* (Chapter 7). *Handbook of the Global Strategy to improve Agricultural and Rural Statistics (GSARS)*: Rome.
- Beillouin et al. (2019) A dataset of meta-analyses on crop diversification at the global scale. *Data in brief* doi.org/10.1016/j.dib.2019.103898
- Zampori, L. and Pant, R., *Suggestions for updating the Product Environmental Footprint (PEF) method*, EUR 29682 EN, Publications Office of the European Union, Luxembourg, 2019, ISBN 978-92-76-00654-1, doi: 10.2760/424613, JRC115959
- Sala S., Beylot A., Corrado S., Crenna E., Sanyé-Mengual E, Secchi M. (2019) *Indicators and Assessment of the environmental impact of EU Consumption. Consumption and Consumer Footprint for assessing and monitoring EU policies with Life Cycle Assessment*, Luxembourg: Publications Office of the European Union, ISBN 978-92-79-99672-6, doi:10.2760/403263, JRC114814.
- Magagna D., Hidalgo González I., Bidoglio G., Peteves S., Adamovic M., Bisselink B., DeFelice M., De Roo A., Dorati C., Ganora D., Medarac H., Pistocchi A., Van De Bund W. and Vanham D. *Water -Energy Nexus in Europe*, Publications Office of the European Union, Luxembourg, 2019, ISBN 978-92-76-03385-1, doi: 10.2760/968197, JRC115853.
- Nessi S., Bulgheroni C., Konti A., Sinkko T., Tonini D., Pant R.: *Environmental sustainability assessment comparing through the means of lifecycle assessment the potential environmental impacts of the use of alternative feedstock (biomass, recycled plastics, CO2) for plastic articles in comparison to using current feedstock (oil and gas). part 1 and 2 - Meta-analysis of selected existing studies*. JRC Technical Report

(JRC114729 and JRC114755), 2018

- Philippidis, G.; Bartelings, H.; Helming, J.; M'barek, R.; Ronzon, T.; Smeets, E.; van Meijl, H.; Shutes, L., The MAGNET model framework for assessing policy coherence and SDGs - Application to the bioeconomy, EUR 29188 EN, 2018, doi:10.2760/560977, JRC11150