

## Selected research highlights

### The economic value of marine turtles in the Asia-Pacific region



Marine turtle species face loss of habitat, population decline and serious risk of extinction. A report by IVM's Luke Brander for the WWF provides a global review of published literature on the economic value of marine turtles, and estimates the value of provisioning services and non-use values in the Asia-Pacific region, using the results of a large scale household survey (> 7,700 respondents). The economic value of conserving healthy and diverse turtle populations to avoid marine turtle extinctions (USD 45 billion per year) appears to be more than 50,000 times greater than the value of harvesting turtles for their meat and shells (USD 800,000 per year). Future research should make clear how this public willingness to pay for marine turtle conservation can be 'captured', i.e. how the hypothetical demand for non-use value can be turned into real cashflow.

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### More people exposed to low-probability coastal flooding

Accounting for tropical cyclones more than doubles the global population exposed to low-probability coastal flooding. This is according to a new study that simulated extreme sea levels that are caused by tropical and extratropical cyclones at global scale.

The study was carried out by researchers from IVM, Deltares, and the Netherlands eScience Center. Using their novel dataset, the researchers found that 192 million people are exposed to a 1-in-1000 year flood, of which 60% can be attributed to tropical cyclones, also called hurricanes or typhoons, alone. Previous studies have underestimated the global exposure to low-probability coastal flooding by 31%. The results of the study were published in Nature's Communications Earth & Environment.



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### Car tyres contribute to tropical ecosystem destruction



Nearly three-quarters of global natural rubber production is used to produce tyres, supporting mobility around the globe. The projected increase in mobility could contribute to further expansion of rubber plantations and impact tropical ecosystems. IVM's Perrine Laroche, Nynke Schulp and Peter Verburg, together with Thomas Kastner, quantified the use of natural rubber in tyres in the EU, the corresponding land footprint, and explored drivers of tyre use using country-specific transport statistics and trade registers of rubber goods. Five percent of the world's natural rubber is consumed in tyres used in the EU, using up to a quarter of the area under rubber plantations in some producing countries. Car use is

## FEATURED RECENT PUBLICATIONS

### Dissertations:

Giorgia di Capua (8 September 2021): *The Indian Monsoon and its interaction with the mid-latitude circulation*.

Jantsje Mol (10 September 2021): *Improving flood preparedness using insights from economic experiments*.

Nadia Bloemendaal (3 November 2021): *Weathering the Storm: tropical cyclone risk under climate change*.

Lars de Ruij (4 November 2021): *Rising waves of indecision: How financial incentives can support flood risk management*.

Sonu Khanal (25 November 2021): *Compound drivers of hydroclimatic extremes in large river basins: Mapping future floods and water resources by modeling compound drivers at multiple spatial and temporal scales*.

### Selected journal articles:

Bakker, V., Verburg, P.H. & van Vliet, J. (2021). Trade-offs between prosperity and urban land per capita in major world cities. *Geography and Sustainability*, 2(2), 134–138. <https://doi.org/10.1016/j.geosus.2021.05.004>

Botzen, W., Duijndam, S., Robinson, P.J. & van Beukering, P. (2022). Behavioral biases and heuristics in perceptions of COVID-19 risks and prevention decisions. *Risk Analysis*. <https://doi.org/10.1111/risa.13882>

Brusselaers, J., Breemers, K., Geerken, T., Christis, M., Lahcen, B. & Dams, Y. (2021). Macroeconomic and environmental consequences of circular economy measures in a small open economy. *The Annals of Regional Science*. <https://doi.org/10.1007/s00168-021-01079-6>

Busker, T., de Moel, H., Haer, T., Schmeits, M., van den Hurk, B., Myers, K., Cirkel, D.G. & Aerts, J. (2022). Blue-green roofs with forecast-based operation to reduce the impact of weather extremes. *Journal of Environmental Management*, 301, 113750. <https://doi.org/10.1016/j.jenvman.2021.113750>

Chiarelli, D.D., D'Odorico, P., Müller, M.F., Mueller, N.D., Davis, K.F., Dell'Angelo, J., Penny, G. & Rulli, M.C. (2022). Competition for water induced by transnational land acquisitions for agriculture. *Nature Communications*, 13(1), 505. <https://doi.org/10.1038/s41467-022-28077-2>

Coumou, D. (2021). Stratospheric winds trigger cold spells. *Science*, 373(6559), 1091. <https://doi.org/10.1126/science.abl9792>

de Ruijter, M.C., Couasnon, A. & Ward, P.J. (2021). Breaking the Silos: An online serious game for multi-risk disaster risk reduction (DRR) management. *Geoscience Communication*, 4(3), 383–397. <https://doi.org/10.5194/gc-4-383-2021>

Funke, N., Huitema, D., Petersen, A. & Nienaber, S. (2021). The Roles of Experts and Expert-

responsible for 58% of this consumption, due to car-dependent lifestyles that are associated with economic prosperity and spatial planning paradigms. While the EU's transport policy focuses on reducing dependence on fossil-fuels, cross-cutting policies are needed to address car-dependency and reduce the EU's land footprint in tropical landscapes without compromising progress towards decarbonisation.

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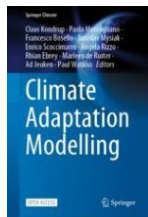
## Biofuels can contribute to climate mitigation, despite sustainability concerns

Historically, traditional biofuel production has been fraught with challenges related to land use competition with food resources, water scarcity issues, environmental degradation, and adverse impacts on global markets. Learning from these experiences and ensuring all spillover impacts from biofuel cultivation are addressed is key. This issue is addressed in the recently published report 'Roadmap to 2050: The Land-Water-Energy Nexus of Biofuels', to which IVM's Jampel dell'Angelo contributed. In this report the authors highlight new technologies, practices in diversifying crop management, life-cycle analysis, and biofuel certification schemes that offer an opportunity to produce biofuels more sustainability in the future for the purpose of global and local emissions reduction efforts as they are used to replace fossil fuels.



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## Books and reports



Rhian Ebrej and Marleen de Ruiter are co-editors of the recent book '[Climate Adaptation Modelling](#)'.

Katarzyna Negacz and Pier Vellinga are co-authors of the book '[Future of Sustainable Agriculture in Saline Environments](#)'.



Several IVM authors contributed to a report on the causes and impacts of the floods in July 2021 ('[Hoogwater 2021, Feiten en duiding](#)', in Dutch).

## Prizes, awards and grants

The [Munich Re RISK Award](#) was recently presented to an international consortium, including scientists from IVM, for their years of work to reduce flood vulnerability in central Vietnam.

### 'Cum laude' for PhD Nadia Bloemendaal

IVM's Nadia Bloemendaal received her PhD for her dissertation entitled '[Weathering the Storm: tropical cyclone risk under climate change](#)' on 3 November 2021. The degree was granted with the distinction 'cum laude'.

Dr Jampel Dell'Angelo was granted as partner in the EU programme for Research and Innovation Solutions in the Mediterranean region (PRIMA) project: **Advancing non-conventional water management for innovative climate-resilient water governance in the Mediterranean Area.**

## Apps, tools, models and data

### A game for managing disaster risk

Based Information in the Advocacy Coalition Framework: Conceptual and Empirical Considerations Based on the Acid Mine Drainage Case Study in Gauteng, South Africa. *Policy Studies Journal*, 49(3), 785–810. <https://doi.org/10.1111/psj.12409>

Hagedoorn, L.C., Koetse, M.J., van Beukering, P.J.H., & Brander, L.M. (2021). Reducing the finance gap for nature-based solutions with time contributions. *Ecosystem Services*, 52, 101371. <https://doi.org/10.1016/j.ecoser.2021.101371>

Hamed, R., van Loon, A.F., Aerts, J. & Coumou, D. (2021). Impacts of compound hot-dry extremes on US soybean yields. *Earth System Dynamics*, 12(4), 1371–1391. <https://doi.org/10.5194/esd-12-1371-2021>

Meyfroidt, P., de Bremond, A., Ryan, C.M., Archer, E., Aspinall, R., Chhabra, A., Camara, G., Corbera, E., ... Verburg, P.H., Zeleke, G. & Zu Ermgassen, E.K.H.J. (2022). Ten facts about land systems for sustainability. *Proceedings of the National Academy of Sciences of the United States of America*, 119(7), e2109217118. <https://doi.org/10.1073/pnas.2109217118>

Morren, M., Mol, J.M., Blasch, J.E. & Malek, Ž. (2021). Changing diets - Testing the impact of knowledge and information nudges on sustainable dietary choices. *Journal of Environmental Psychology*, 75, 101610. <https://doi.org/10.1016/j.jenvp.2021.101610>

Negacz, K. (2021). Distinction through ecotourism: Factors influencing sustainable consumer choices. *Scandinavian Journal of Hospitality and Tourism*, 21(5), 514–530. <https://doi.org/10.1080/15022250.2021.1978860>

Pattberg, P.H., Kaiser, C., Widerberg, O.E. & Stripple, J. (2022). 20 Years of global climate change governance research: taking stock and moving forward. *International Environmental Agreements: Politics Law and Economics*. <https://doi.org/10.1007/s10784-022-09568-5>

Schaafsma, M., Eigenbrod, F., Gasparatos, A., Gross-Camp, N., Hutton, C., Nunan, F., Schreckenberg, K. & Turner, K. (2021). Trade-off decisions in ecosystem management for poverty alleviation. *Ecological Economics*, 187, 107103. <https://doi.org/10.1016/j.ecolecon.2021.107103>

Schrammeijer, E.A., van Zanten, B.T. & Verburg, P.H. (2021). Whose park? Crowdsourcing citizen's urban green space preferences to inform needs-based management decisions. *Sustainable Cities and Society*, 74, 103249. <https://doi.org/10.1016/j.scs.2021.103249>

Zhou, F. & Botzen, W. (2021). Firm Level Evidence of Disaster Impacts on Growth in Vietnam. *Environmental and Resource Economics*, 79(2), 277–322. <https://doi.org/10.1007/s10640-021-00562-0>

## STAFF AND ORGANISATIONAL NEWS

### Appointments

Philip Ward has taken over the management tasks of Jeroen Aerts as head of IVM's section Water and Climate Risk (WCR). Anne van Loon will be the deputy head of WCR.

Dim Coumou was appointed as Professor of Climate Extremes & Societal Risk.

Johanna Koehler was selected as a member of the Amsterdam Young Academy.

Michel den Elzen was appointed to the endowed chair of 'International Climate Policy and Mitigation of Climate Change'.

### Hello and goodbye

Over the past months, IVM has welcomed many new PhD researchers:

- In the section Water and Climate Risk (WCR):



Traditional theories and models for reducing the risks of natural disasters focus substantially on isolated dangers, even though the impacts are increasingly intertwined. That's the reason climate scientists at IVM have developed a game to help policy makers understand the complexity of their measures for disaster risk reduction in an area with multiple dangers.

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## Upcoming events

**22-23 March 2022**, Brussels and online: Launching the transition to the low-carbon society: Europe's past, present and future green landscapes. At this public event, the results of [TERRANOVA](#) (the European Landscape Learning Initiative) will be presented.

**28-29 April 2022**, Brussels and online: '[Putting people at the heart of energy transitions](#)'. Four EU projects, including the IVM-led NEWCOMERS project, bring their results together and discuss them with energy leaders at the local, national and European levels.

**Thursday 2 June 2022, 13.45h**, Aula VU Amsterdam: [PhD defence Liselotte Hagedoorn](#). Thesis title: *Time is money: Valuing the benefits of nature-based solutions in a lower income context*.

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IVM (Institute for Environmental Studies), Vrije Universiteit Amsterdam produces two newsletters per year to promote and communicate its research activities. They present a series of articles of our researchers on their newest findings in the fields of Environmental Geography, Economics, Policy and Governance, and Water and Climate Risk. You are receiving this newsletter because you have been in contact with us recently or in the past. Should you not wish to receive our information in the future please unsubscribe by [clicking here](#) (send the resulting e-mail as it is). If you receive our newsletter indirectly you can subscribe by [clicking here](#) (send the resulting e-mail as it is). For more information please visit our website [www.ivm.vu.nl](http://www.ivm.vu.nl) or contact us through [info.ivm@vu.nl](mailto:info.ivm@vu.nl)

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[Joël De Plaen](#), [Heidi Mendoza](#), [Judith Claassen](#), [Ruoying Dai](#), [Ruben Weesie](#), [Irene Benito Lazaro](#), [Tamara Happé](#), and [Lotte Muller](#);

- In the section Environmental Economics (EE): [Thijs Endendijk](#)
- In the section Environmental Geography (EG): [Rex Steward](#), [Lanping Tang](#), [Alex Neidermeier](#), [Sinoxolo Magaya](#), and [Tom Hackbarth](#)
- In the section Environmental Policy Analysis (EPA): [Cornelia Fast](#), [Eszter Szedlacsek](#), [Sander de Vries](#) and [Beibei Yang](#)

In the EG section, [Michelle Eichinger](#), [Anne Elise Stratton](#), [Tim Williams](#) and [Ciska Ulug](#) have started as Postdoc Researchers, [Saskia Oostdijk](#), [Antonia Matthies](#), [Atoesa Farokhi](#) and [Roos van Rosmalen](#) as Junior Researchers, and [Adna Steinmann](#) as a Junior Lecturer.

EPA's staff was extended by the arrival of [Ina Lehmann](#) as an Assistant Professor, [Pim van Tongeren](#) as a Junior Researcher, and [Charlotte Rappel](#) as a Junior Lecturer.

[Maurizio Mazzoleni](#) and [Alejandra Rodríguez](#) have joined the WCR section, as an Assistant Professor and as a Postdoc respectively.

[Tomáš Baďura](#) is a new Postdoc in the EE section, and [Marta Talevi](#) has joined EE as an Assistant Professor.

Lars de Ruig has left IVM to become a consultant at Royal HaskoningDHV (Rivers & Coasts group). Yue Dou has moved to ITC Twente, where she is an Assistant Professor. Leen Felix decided to stop with her PhD and follow her career elsewhere. Franziska Komossa also left IVM and is now is a postdoctoral researcher at the University of Zürich. Rosa Pols continues her sustainability career at Bureau 2030.