Transitions Pathways and Risk Analysis for Climate Change Mitigation and Adaptation Strategies

TRANSrisk
TRANSITION PATHWAYS AND RISK ANALYSIS FOR CLIMATE CHANGE POLICIES

TRANSrisk Annual Review

End of Year Two, Autumn 2017

transrisk-project.eu

TRANSrisk Overview (1)

Title: Transitions pathways and risk analysis for climate change mitigation and adaptation strategies (TRANSrisk).

Funding: H2020 - Research and Innovation Action.

Started: September 2015.

Duration: 36 Months.

Coordinator: SPRU – Science Policy Research Unit, University of Sussex (UK).

Partners: 12.

Budget: € 7,454,000 H2020, plus €520,200 additional funding.

TRANSrisk Overview (2)

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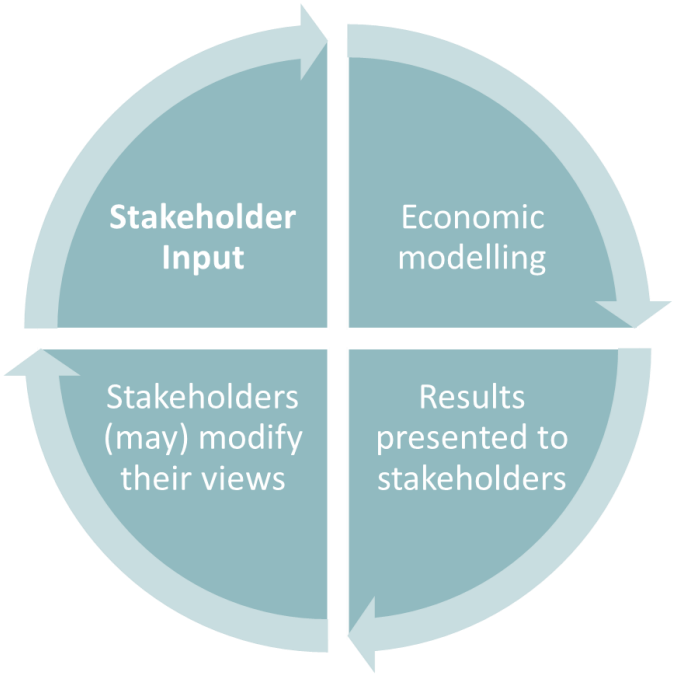
Who we are

Science Technology Policy Research, University of Sussex	SPRU	UK
Basque Centre for Climate Change	BC3	ES
Cambridge Econometrics	CE	UK
Energy Research Centre of the Netherlands	ECN	NL
Swiss Federal Institute of Technology (funded by Swiss Gov't)	ETH Zurich	CH
Institute for Structural Research	IBS	PL
Joint Implementation Network	JIN	NL
National Technical University of Athens	NTUA	GR
Stockholm Environment Institute	SEI	SE, KE
University of Graz	UniGraz	AT
University of Piraeus Research Centre	UPRC	GR
Pontifical Catholic University of Chile	CLAPESUC	CL

TRANSrisk Approach



- Combination of **economic models** with **stakeholder input**. Stakeholder insight is used to feed the model inputs, and the results are presented back to stakeholders to see how this affects their views.
- This approach grounds our **models in the complexity of the real world**, and allows stakeholders to see the impact of their views in terms of carbon emissions, technology deployment and/or economic development.
- Agreement on a **common framework between the quantitative modellers and social scientists** is essential for this approach to work effectively.

Summary of Project Plan

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Year one

- Project initiation
- Project systems' establishment
- Scientific framework & guidance
- Dissemination tools.

Year two

- Case studies
- Scientific work on risk and uncertainty
- Dissemination of initial outputs

Year three

- Case studies completion
- Scientific outputs and formulate policy recommendations/ tools
- Comprehensive dissemination programme.

Key Project Outputs in First Year

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Stakeholder engagement and interactions	• **D2.2** Report on complementarity of participatory, stakeholder engagement tools with quantitative tools
Country case studies	• **D3.2** Context of 14 country case studies (part of final brief D3.3)
Synergies and conflicts between different energy system pathways	• **D4.2** Implications of different "heterodox" mitigation policies • **D4.3** Implications of different mitigation portfolios based on stakeholder preferences • **D4.4** Synergies and conflicts of different transition pathways
Uncertainty and risk appraisal of policy options	• **D5.1** Review of key uncertainties and risks for climate policy • **D5.2** Quantitative appraisal of climate policy risks • **D5.3** Appraisal of economic uncertainties associated with climate policy
Innovation policies and transition pathways	• **D6.2** Report on Social Discourse Analyses and Social Network Analyses

Deliverables ('D…') are outputs agreed as part of the project funding

D2.2 Report on complementarity of participatory, stakeholder engagement tools with quantitative tools

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- Presents methodologies for use in stakeholder engagement, e.g. in stakeholder workshops.
- Focuses on using (and integrating) both qualitative and quantitative tools.
- Tools are used to identify preferences, options, impacts, costs and uncertainties with respect to the design of low-emission transition pathways.
- Describes theoretical application, plus learning points from practical application in early TRANSrisk case studies.

Qualitative and quantitative integration techniques being tested at a TRANSrisk partner workshop in Athens

D3.2 Context of 14 country case studies (part of final brief D3.3)

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- 14 separate documents providing the context for each case study. 4 areas are explored:
  - **Environmental context**, includes a broad discussion of each country's energy sector by sector.
  - **Economic context**, includes the general economy situation of each country and national economic priorities.
  - **Social context**, highlights the key social issues within the country that relate to energy and climate change, as well as the societal perception of climate change.
  - **Political context**, explores the political priorities within the country.

- A new tool, **MATISE** (Mapping Tool for Innovation Systems Evaluation), was developed to streamline the process of creating system maps across the case studies.

Case Study Countries

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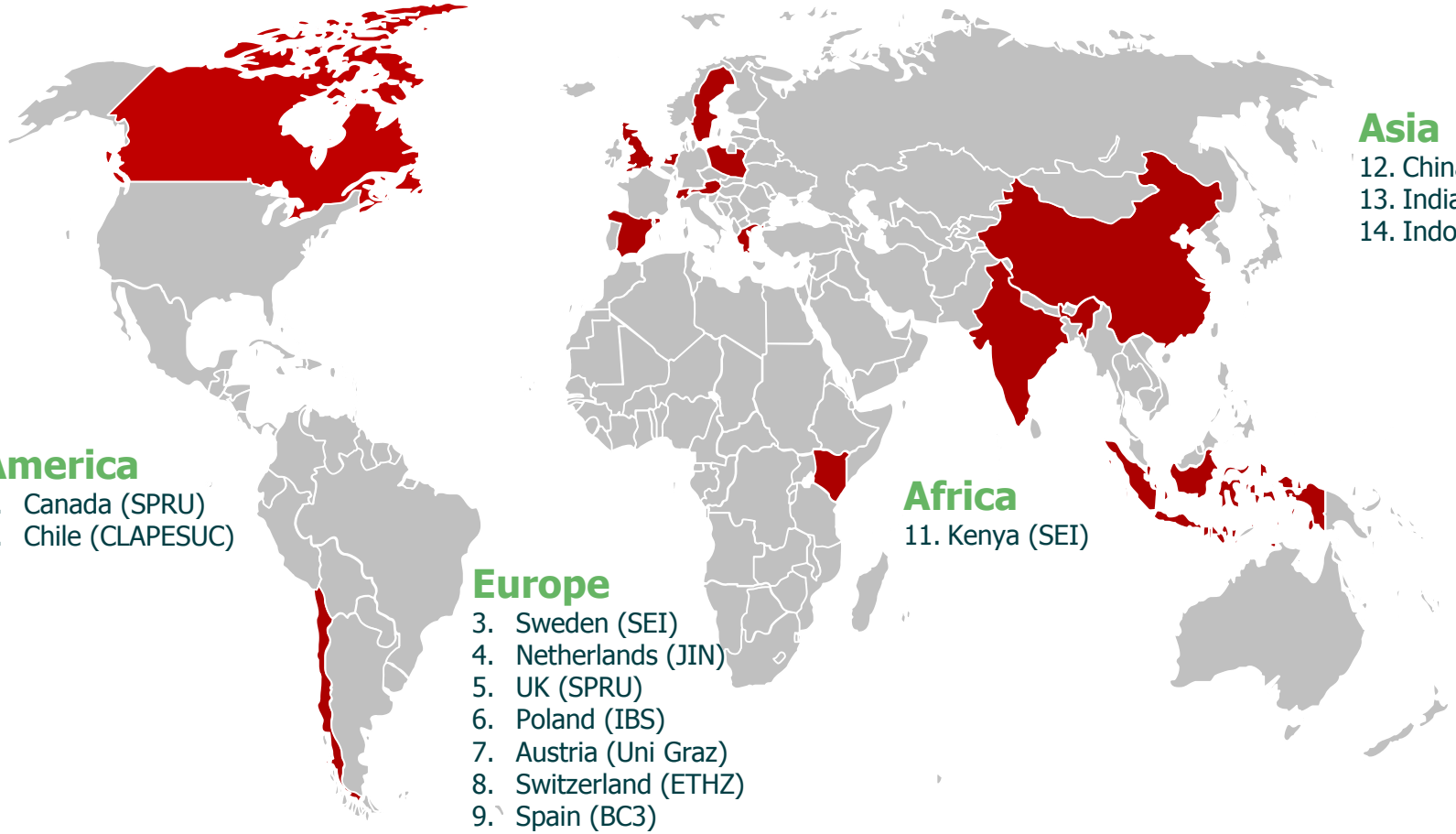

America
1. Canada (SPRU)
2. Chile (CLAPESUC)

Europe
3. Sweden (SEI)
4. Netherlands (JIN)
5. UK (SPRU)
6. Poland (IBS)
7. Austria (Uni Graz)
8. Switzerland (ETHZ)
9. Spain (BC3)
10. Greece (NTUA/ UPRC)

Africa
11. Kenya (SEI)

Asia
12. China (SPRU)
13. India (SPRU)
14. Indonesia (SEI)

D4.2 Implications of different "heterodox" mitigation policies

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- Examines the impact of a range of behaviour change measures (diet, travel, etc.), and how they could assist in meeting climate targets.
- Modeling results indicate that modest to rigorous measures could reduce per capita footprint emissions by 6% to 16%.
- Within the EU these measures could reduce the cost of meeting climate targets by between 13.5% and 30%.
- Most behavioural options would also yield co-benefits such as monetary savings, positive health impacts or animal wellbeing.

Image Source: Velo City Day 2 by ECF licenced under CC BY 2.0

D4.3 Implications of different mitigation portfolios based on stakeholder preferences

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- Analyses different **mitigation portfolios** selected by stakeholders, with the aim of:
  - Exploring how stakeholder engagement can support scenario development and pathway design.
  - Quantifying the trade-offs of stakeholder led mitigation portfolios .
  - Observing if initial preferences change when stakeholders are provided with more information (from modeling).
- A model generates an assumed economically efficient pathway for reaching climate targets, then stakeholder views are used to restrict the availability of technologies (for example, maximum deployment or when it becomes available).
  - Most stakeholder pathways are technically possible, but vary widely in their cost.
  - Most stakeholders moderated their preferred climate target (from 1.5°C to 2°C) when presented with feedback on technology deployment and cost.

D4.4 Synergies and conflicts of different transition pathways

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- Investigates the co-effects of climate change mitigation pathways in different regions of the world, based upon the co-benefits and risks identified in chapter 6.6 of the fifth IPCC assessment report.
- Eight sub reports on:
  - Human health (Global).
  - Socioeconomic impacts of pollution (Chile).
  - Energy access through modelling (Africa).
  - Energy access through descriptive analysis (Kenya, Ethiopia & Rwanda).
  - The energy-water nexus (Ethiopia).
  - Land use (European Union, India, Japan & South-Korea).
  - Macro-economic impacts in terms of employment (European Union).
  - Macro-economic impacts in terms other indicators, such as welfare and competitiveness (Austria).

Image source: Air Pollution Level 5 London April 30 2014 by David Holt licensed under CC BY 2.0

D5.1 Review of key uncertainties and risks for climate policy

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- Thorough literature review to 410 articles to explore risks and uncertainties associated with climate policy choices.
- Overwhelming methodological bias towards quantitative and model-based analysis, and strong focus on the energy production sectors.
- Environmental risks of mitigation policies appear under researched.

Image source: Colorful 3D by Paul Cross licensed under CC BY 2.0

D5.2 Quantitative appraisal of climate policy risks

- Systematic review of risks related to energy and climate transitions.
- 300 implementation and 99 consequential risks in the literature, as well as 154 implementation and 102 consequential risks from the case studies.
- Special attention to the impact of human activities on successful implementation of a particular policy.
- Little attention to how the environment may impede the implementation of a pathway.

D5.3 Appraisal of economic uncertainties associated with climate policy

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- Evaluates two key areas, with a focus on energy and climate system input parameters used in model evaluations. Several TRANSrisk case studies are used to explore and frame the issues.
- The potential range of climate impacts is explored. Results show that variations in CO_2 emissions, CO_2 concentration, and radiative forcing in 2100 are more than 75% explained by the uncertainty in GDP growth. Uncertainties related to population, carbon intensity, non-CO_2 forcing and carbon cycle also play a role, but their impact is relatively low.
- Key uncertainties in the socioeconomic energy and climate system that determine the impact of low-carbon mitigation pathways are also explored. These include both general and specific consequential risks related to potential mitigation pathways, for example risks to GDP growth, employment, etc.

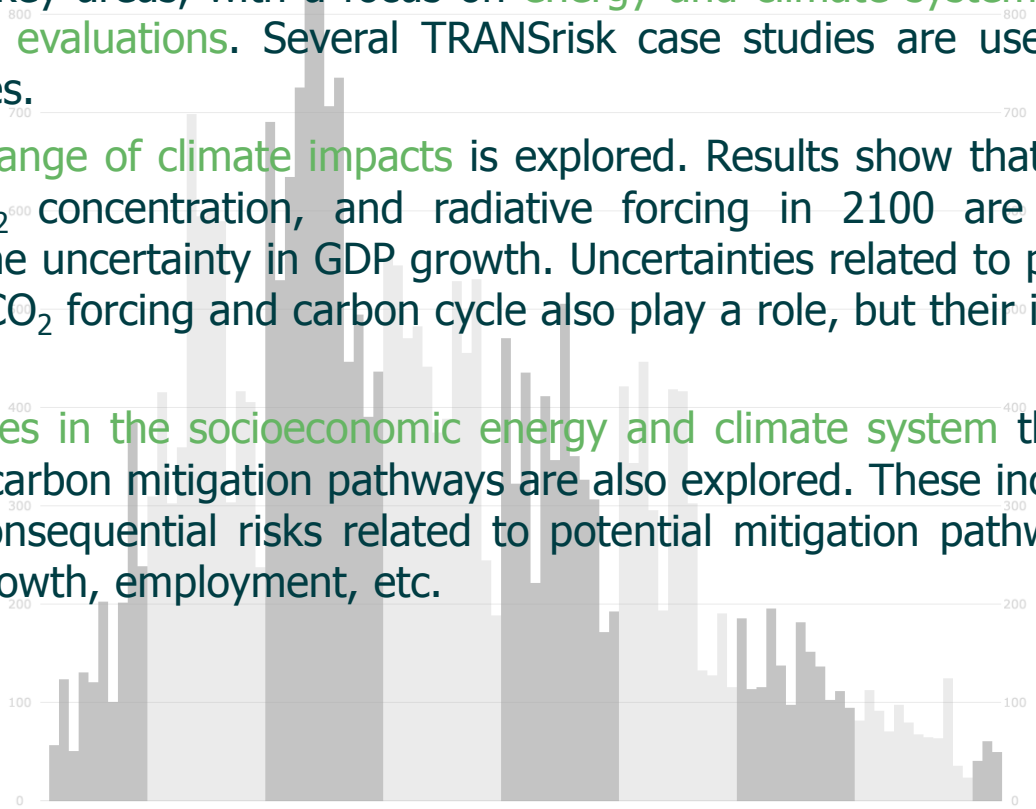

Image Source: Household biogas plant near Durban, South Africa by SuSanA Secretariat licensed under CC BY 2.0

D6.2 Report on Social Discourse Analyses and Social Network Analyses

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- Explores the role of agency and power in innovation and transition processes, focusing on how stakeholders act to shape and constrain innovation processes and associated transition pathways.
- Three technical approaches used for the analysis: multi-level perspective, technological innovation systems and the system mapping approach.
- A methodological toolkit accompanies the report, providing a structured way in which to apply the integrated technical approach.
- The toolkit and integrated approach was applied to the TRANSrisk Indonesia case study.

Image source: WebSanDiego mailing list posts graph by Joe Crawford licensed under CC BY 2.0

DISSEMINATION

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- Dissemination at key **conferences and workshops**:
  - Side event at COP22 (October 2016), "Assessing mitigation pathway risk and uncertainty: case studies in the Netherlands, Kenya and Chile".
  - Panel session at the 1st International Conference on Energy Research & Social Science (April 2017), "Conceptualizing Risk in Transition Pathways for Climate Change: Interdisciplinary Insights".
  - Science policy forum at the EC (March 2017), "Risk, Uncertainty and Opportunity in Low Carbon Transitions: Demand Side Findings from the TRANSrisk Project".
- Dissemination **material**:
  - 4 infographics
  - 4 videos in YouTube
  - 3 leaflets
  - 15 newsletters and press releases
- **Springer Book** to be published:

Springer

Understanding risks and uncertainties in energy and climate policy: Multidisciplinary methods and tools towards a low carbon society.

SCIENTIFIC PUBLICATIONS (2ND YEAR)

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- González-Eguino, M., M. B. Neumann, I. Arto, I. Capellán-Perez, and S. H. Faria (2017), "Mitigation implications of an ice-free summer in the Arctic Ocean", Earth's Future.
- González-Eguino, M., Olabe, A., & Ribera, T. (2017). "New Coal-Fired Plants Jeopardise Paris Agreement", Sustainability.
- Arias-Gaviria, J., B. van der Zwaan, T. Kober, and S. Arango-Aramburo (2017), "The prospects for Small Hydropower in Colombia", Renewable Energy.
- Angelopoulos, D., H. Doukas, J. Psarras, and G. Stamtsis (2017), "Risk-based analysis and policy implications for renewable energy investments in Greece", Energy Policy,
- Johnson, F., Bossner, S., Suljada, T., Takama, T., Juwita, C., Budiman, I., Sari, A., Widodo E. (2016). "Sustainability and Resilience of Bioenergy for Climate Change in Bali and East Java: Scoping and Envisioning", Abstract Book - 15th World Renewable Energy Congress 2016 (15th WREC) in conjunction with the 5th Indonesia Renewable Energy and Energy Conservation Summit (5th IRES).

Linking With Other Projects

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- TRANSrisk is working with other, complementary EC-funded projects to maximise our impact.
- TRANSrisk has joined a consortium of several other EU-funded projects to develop the climatechangemitigation.eu platform, coordinated by the CARISMA project
- In October 2016 Towards2030-dialogue and TRANSrisk co-organised a workshop "*Towards a Low-Carbon European Union – The Case of Greece*" at NTUA premises in Athens to increasing dialogue in issues towards a Low-Carbon European Union.

Moving On - Key Activities and Expected Outputs for 2017-18 (1)

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Stakeholder engagement and case studies:

- *Stakeholder engagement will be finalised, and the results of the case studies communicated back to key national stakeholders.*
- *D3.3 (A final brief of 14 country case studies) will take the form of a portfolio of dissemination outputs for each case study, e.g. policy briefs, news articles, videos, etc.*
- *Public acceptance report (D2.5) will be submitted in February 2018.*

Synergies and conflicts: Updated with new data as case study results become available.

Uncertainty and risk appraisal of policy options:

- *Public and expert opinions on the importance of climate policy risks (D5.4).*
- *Multi-criteria consideration of risk and uncertainty for climate policy (D5.5).*

Moving On - Key Activities and Expected Outputs for 2017-18 (2)

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Innovation policies and transition pathways:

- *Report on investigating agency at firms and individual household levels, including method/model documentation and analytical findings (D6.3).*
- *Report describing key Characteristics of Innovation Policy Options (D6.4).*
- *Report on Innovation Dynamics in Transition Pathways (D6.5).*

Comparison of transition pathways and decision support tools:

- *Report on the comparisons of transition pathways (D7.1).*
- *Report on the Portfolio Analysis of the transition pathways (D7.2).*
- *Toolboxes for adaptation and mitigation policy pathways (D7.3).*

Moving On - Key Activities and Expected Outputs for 2017-18 (3)

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Dissemination:

- *Conclusions from the events at participating countries, the final conference in Brussels (D8.3).*
- *Newsletters, scientific publications and presentations (D8.4).*

Other activities planned include:

- *Final events, including a final conference in Brussels and policy forums in some case study counties .*
- *Targeting growth in newsletter readership plus social media followers (Twitter, Facebook, LinkedIn, etc.).*
- *Launch of TRANSrisk commentaries, providing viewpoints on timely issues.*
- *One-to-one meetings with key policy personnel.*

A key challenge is cultivating **relationships with policy and other decision makers**, both on a case study and project wide level.

How to Contact us (1/2)

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Visit our Website:
www.transrisk-project.eu

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Like us on Facebook: transriskEU
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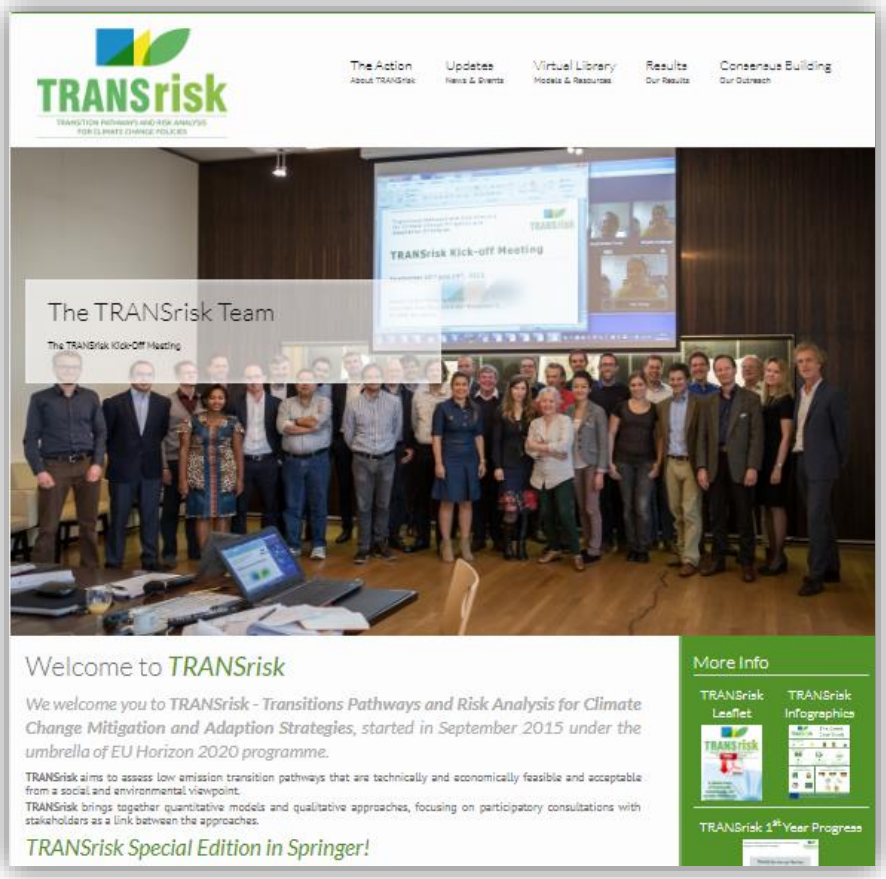
Find us in LinkedIn: TRANSrisk_EU
Watch us on YouTube: TRANSrisk



How to Contact us (2/2)

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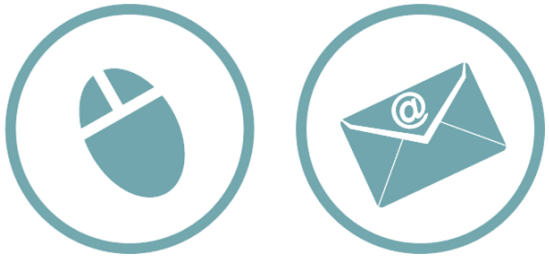

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