**District Court of The Hague**

Case number: C/09/571932 2019/379 **STATEMENT ON THE RECORD OF**

 **RESPONSE TO EXHIBIT RK-37**

Date: 30 December 2020 in the matter of:

 1. **Vereniging Milieudefensie**

 both on its own behalf, and in its capacity of representative ad litem and representative of the co-claimants who are listed on **Annex A**, which annex is attached to the summons and forms part thereof,

 having its registered office in Amsterdam, the Netherlands;

 2. **Stichting Greenpeace Nederland,**

 having its registered office in Amsterdam, the Netherlands;

 3. **Landelijke Vereniging tot Behoud van de Waddenzee**,

 having its registered office in Harlingen, the Netherlands;

 4. **Stichting ter bevordering van de Fossielvrij-beweging**,

 having its registered office in Amsterdam, the Netherlands;

 5. **Stichting Both ENDS**,

 having its registered office in Amsterdam, the Netherlands;

 6. **Jongeren Milieu Actief**,

 having its registered office in Amsterdam, the Netherlands;

 7. **Stichting ActionAid**,

 having its registered office in Amsterdam, the Netherlands

 Claimants

 Hereinafter also called: "Milieudefensie et al.”

 Counsel: R.H.J. Cox, D.M.J. Dexters, A.J.M. van Diem and S.J. Keuls

 Versus

 **Royal Dutch Shell plc**

 Having its registered office in The Hague, the Netherlands

 Defendant

 Counsel: J. de Bie Leuveling Tjeenk, N.H. van den Biggelaar and D. Horeman

1. In its notes on oral arguments 8 (Merits of the claim - part 3) Milieudefensie et al. went into the causal relationship between the awarding of the claim and the reduction of CO2 emissions of the Shell group.[[1]](#footnote-1) That awarding of the claim will lead to a reduction of CO2 emissions of the Shell group, is not a matter of discussion between the parties. The causal relationship between the claim and the reduction of the emissions of the Shell group has thus been established between the parties.

2. RDS takes the position, however, that the emissions reduction which (in the first instance) will be realised within the Shell group, will then virtually immediately or in time (i.e. in the second instance) be fully negated by increasing emissions of other parties.

3. With a reference to the report of Mulder et al. (Exhibit RK-35, hereinafter the Mulder report), RDS - in short - took the position that the claimed emissions reduction will lead to a production reduction within the Shell group and that said relevant production reduction will be negated as a result of the (historical) characteristics of the oil and gas market and the increasing production of other oil and gas companies. This would lead to a perfect and absolute substitution, so that the judgment would not have any effect on global emissions.

4. Milieudefensie et al. substantiated and explained in detail in the notes on oral arguments 8 why this (second-line) causality defence of RDS cannot succeed, to which substantiation and explanation reference is made for the sake of brevity.[[2]](#footnote-2) In said arguments Milieudefensie et al. also discussed and refuted the Mulder report on the basis of its Exhibit 337 (Erickson review).

5. On 16 December RDS then submitted as Exhibit RK-37 an additional paper of Mulder into the proceedings (Mulder paper), which is a response to the Erickson review. The District Court permitted Milieudefensie et al. to respond to the Mulder paper in a statement on the record.

6. Milieudefensie et al. first wishes to refer to the determination already discussed in the notes on oral arguments 8 that the scientific literature relating to the causal (market) consequences of production-limiting measures shows that said causal consequences go far further than only the direct market effect of a 20% to 60% consumption reduction for every barrel of oil that is not produced.[[3]](#footnote-3) The discussion included, inter alia, that studies of political scientists and sociologists show that production-limiting measures for fossil fuels increase the public support for more ambitious climate action and lead to public modification of the standards. According to these studies, this can result in a supporting wave of change (in production and consumption) which is necessary to achieve a climate-neutral society. Other studies which were discussed show that production-limiting measures address, inter alia, the increasing lock-in problem of the growing fossil infrastructure, so that the energy transition is made easier. In consequence thereof the transition costs, inter alia, are decreasing, sustainable energy will gain market share more easily (and that is what is necessary to achieve the Paris goals). The obstructive interests of fossil companies will decrease because, due to their investment limitations, their financial-economic interests in fossil infrastructure will decline and consequently also their obstructive and inhibitory influence on political and policy climate initiatives.[[4]](#footnote-4)

7. It is due, inter alia, to the broader causal consequences of production-limiting measures, that under the UN Climate regime a proactive role of non-state actors is seen as crucial for achieving the global climate task. It is also the reason why the Paris Agreement indicates in Article 2(1)(c) the shifting of investment flows to climate-friendly solutions as a key instrument for achieving the global climate task.[[5]](#footnote-5) According to the global community, every non-climate-friendly investment is causally connected to increasing the climate problem, and every climate-friendly investment is causally connected to reducing the climate problem.

8. The Mulder report and the Mulder paper do not go into this large variety of causality relationships which have been discussed, substantiated and explained by Milieudefensie et al. For that reason alone, the (second-line) causality defence of RDS cannot succeed.

9. After following the court sessions, this was also the conclusion of Prof. dr. ir. Jan Rotmans, professor of Transitions & Sustainability at the Erasmus University and an international authority in the area of transitions and sustainability, as evidenced by, inter alia, the 250 scientific publications and 30 books which he has written in this discipline. During the court sessions he publicly made critical statements about the approach of Mulder et al. (via Twitter) and for the benefit of the case prepared a brief expert statement about this which, together with a brief biography, is submitted into the proceedings as Exhibit 338.

10. Rotmans first of all pointed out that the findings of Mulder et al. were made for payment by RDS[[6]](#footnote-6) and that they do not concern a peer reviewed study.[[7]](#footnote-7) The studies on which Milieudefensie et al. is basing its case are peer reviewed, are published in reputable scientific journals and have thus undergone a proper scientific review and check. Rotmans furthermore pointed out that Mulder is not an energy transition expert and that the study is weakly substantiated, static and is only based on applying a simple substitution mechanism. The study does not do justice to the turbulent and complex dynamics of the energy transition in which market dynamics, geopolitical forces, climate policy, technological developments, social pressure and consumer behaviour affect each other in a variety of ways, according to Rotmans. This implies that serious changes will take place and according to Rotmans these are visible, such as the global climate protests, the increasing number of lawsuits against fossil energy companies, highly fluctuating oil prices (even negative prices this spring, a novelty), pension funds and investors who are deciding against making investments in coal and oil, and large fossil energy companies which are in trouble.[[8]](#footnote-8)

11. Any intervention, such as the intervention via the requested judgment must, according to Rotmans, be seen in the light of this complex dynamic, which requires not only a look at the market dynamic, but also the system dynamic. This therefore requires an integral look at the energy transition and Mulder et al. have completely failed to do so. The examples of decades past which Mulder et al. cite are illustrative of this (the examples of the oil market after the revolution in Iran and after the Iraqi invasion of Kuwait), which according to Rotmans are incomparable, because at that time, contrary to now, there was not yet a climate policy with climate targets as part of binding climate treaties, there was not yet electrification as a threat to the oil market and there was not in any way social and political pressure on big oil companies, which at that time were still in charge and seemed to be settled for eternity. The current market dynamic is therefore incomparable to that of the past decades. According to Rotmans the current market is more unstable and volatile, the energy transition is now in full swing and it is at a tipping point. Because of the current market and system dynamic, according to Rotmans a small intervention can have an enormous effect because of self-reinforcing feedback.[[9]](#footnote-9)

12. The effect of a judgment to reduce emissions of RDS and the Shell group and the production limitation which will be the result thereof (for the sake of convenience Rotmans assumed a production reduction of 45%)[[10]](#footnote-10) is therefore greater than is presumed by Mulder et al. If Shell were to produce 45% less as a result of the judgment, the indirect effects thereof could be many times greater than the direct market effect, according to Rotmans. He argues that the judgment can lead to a chain reaction on the oil market, can have further impact on the financial markets and on investment funds, will lead to more focus on sustainable energy sources and can lead to several comparable lawsuits, which will also bring about a chain reaction (see in this respect also the earlier argument of Milieudefensie et al.).[[11]](#footnote-11) According to him there are thus many dominos which due to the current unstable and volatile market and system dynamic could fall, which could accelerate the energy transition.[[12]](#footnote-12)

13. Rotmans concluded that the total effect of a judgment against RDS will be many times greater than the initial direct effect and that Mulder et al. did not in any way include those additional effects in their approach, while the current dynamic of the energy transition does require such. For the reasons already mentioned Rotmans believes the study of Mulder et al. to be controversial, scientifically invalid and not a reliable basis for a complex lawsuit such as the one against RDS.

14. Milieudefensie et al. sees in this argument of Rotmans a confirmation and further support for its substantiated assertions that in this case there are many forms of direct and indirect causality which entail that awarding of the claim will very likely not only have an effect on the emissions of RDS and the Shell group, but will also have a broader favourable effect on the energy transition in general. Consequently, the emissions reduction result of the judgment will ultimately be greater than the direct emissions reduction within the Shell group which will be the result of the judgment.

15. It is in any event established that the claimed emissions reduction will lead to an emissions reduction of RDS and the Shell group. This is what the case against RDS is about and that causal relationship is not up for discussion. RDS’ defence that said emissions reduction will be fully negated in the short or the long term by others, on the basis of the arguments and assertions presented by Milieudefensie et al. is at the least very unlikely.

16. The following should be noted in addition thereto. By means of peer reviewed scientific publications Milieudefensie et al. demonstrated in the notes on oral arguments 8 that even in a static analysis, in which a narrow view is taken of the substitution mechanism, there will be a direct market effect of a 20% to 60% consumption reduction for every barrel of oil that is not produced. These scientific findings were also taken over by UNEP in the Production Gap report.[[13]](#footnote-13) It is once again relevant that the report of Mulder et al. is not peer reviewed and thus did not undergo a thorough scientific review.

17. Milieudefensie et al. explained in the notes on oral arguments 8 in relation to the Mulder report, inter alia, that Mulder et al. acknowledges the relationship between production limitation, price effect and consumption limitation set out by Milieudefensie et al.[[14]](#footnote-14) In the Mulder paper, Mulder et al. now add the following nuance to that acknowledgement: "We agree with the assertion of Erickson (2020) that a limitation of the production by a company or country under certain circumstances can temporarily lead to higher prices and consequently lower consumption."[[15]](#footnote-15)

18. According to Mulder in his additional paper the circumstances which in the case of production limitation lead to lower consumption are (i) if other producers operate at their maximum capacity and consequently are not able to expand their production (circumstance 1) and (ii) if other producers do have more capacity but can only produce at higher costs than RDS (circumstance 2).[[16]](#footnote-16) Mulder then indicates that these circumstances would not occur, but further reading of the paper shows otherwise.

19. According to Mulder, circumstance 1 would not occur because globally there are still substantial oil and gas reserves.

20. Circumstance 2 would not occur because Shell and other oil and gas companies operate under comparable circumstances and comparable costs.[[17]](#footnote-17) [[18]](#footnote-18)

21. However, Mulder himself undermines this latter assertion regarding circumstance 2 further on in the paper by referring to a study which shows that of the six studied oil companies, 4 operate at higher production costs than Shell and two at lower production costs than Shell. The four companies which are less efficient than Shell are Total, Exxon, Conoco and Chevron. The two companies which are more efficient than Shell are ENI and BP. Circumstance 2 has therefore indeed occurred because, according to this cross-section of the market, a substantial part of the oil companies will not be able to expand their production capacity at the same cost price as Shell and will thus have to apply a higher cost price for an expansion of their production. This is a circumstance (circumstance 2) which according to Mulder et al. will indeed lead to a more limited substitution. This also aligns with the findings of Erickson which Milieudefensie et al. already presented earlier, entailing that data of Rystad Energy shows that Shell can operate at a cost price which is below the market average and which will therefore be more risky or less feasible for other companies with a higher cost price, so that there would be no perfect substitution.[[19]](#footnote-19)

22. In his paper Mulder points out that in his opinion it is likely that Shell will sell its licenses to companies which are more efficient. The only two companies which Mulder mentions in that respect are BP and ENI. However, these two companies have more ambitious climate plans than RDS and in addition will phase out the production of fossil fuels in the coming decade. This appears from the report of Oil Change International which has been submitted as Exhibit 333.[[20]](#footnote-20) It is partly for this reason that it is not a given that BP or ENI will take over all licenses to be made available by Shell. BP, for example, wants to reduce its oil and gas production as of 2030 by 40%.[[21]](#footnote-21) ENI, moreover, is 60% smaller than RDS and should in any event not be deemed capable of taking over all licenses made available by Shell.[[22]](#footnote-22) In the event of a takeover of licenses by a less efficient company than RDS there is, as stated, according to Mulder no perfect substitution. Lastly, it is again pointed out in this respect that the judgment will in particular have an effect on future projects and not or to a lesser degree on existing projects and reserves of RDS.[[23]](#footnote-23) Consequently the Shell group will not have to transfer any or will only have to transfer a small number of licenses to comply with the claim.

23. In the notes on oral arguments 8, in relation to the Mulder report, Milieudefensie et al. furthermore explained, inter alia, that Mulder et al. failed to - as did happen in other published studies - make a scientific comparison between, on the one part, the situation of price development without production-limiting measures and on the other the situation of price development with production-limiting measures. Milieudefensie et al. pointed out that without comparing these two situations to each other no conclusions can be drawn, while the published studies in which this comparison was made consistently show that the limiting of oil and gas production leads to rising prices and to reduced consumption.[[24]](#footnote-24) The Mulder paper acknowledges that it was not studied how great the demand for oil would have been without the cited production-limiting oil crises. Mulder does not dispute that this comparison would have been possible and it remains unclear why this common scientific approach was not followed.[[25]](#footnote-25)

24. The Mulder paper furthermore acknowledges that in any event there was a temporary effect on the oil price in production-limiting crisis situations.[[26]](#footnote-26) This temporary price effect also leads to a change in consumer behaviour, both in the short term and in the longer term, as Erickson explained in his last response to the Mulder paper, which response is submitted into the proceedings as Exhibit 339 (Erickson response).

25. In his response Erickson stated that a temporary price increase of oil and gas as a result of a production limitation will in the short-term lead to less oil and gas being consumed, so that in the short-term fewer CO2 emissions are released. He emphasises the importance thereof because it is the cumulative emissions which count and every emission avoided in the short-term is therefore important.[[27]](#footnote-27) See in the same sense the US Supreme Court in the EPA case, which for the same reason was of the opinion that every reduction and delay in the accumulation of emissions is relevant because it offers extra time to solve the climate problem.[[28]](#footnote-28)

26. In any event, a temporary price increase as a result of a limitation of production not only leads to effects in the short-term but also in the long-term, according to Erickson. Consumers respond to price increases in oil and gas by changes in behaviour, such as purchasing a more energy-efficient car or by making different choices, for example reducing the commuting distance between home and work. These kind of changes and choices have long-term effects so that fewer fossil fuels will be used in the future. Erickson points out that studies consistently show that these long-term effects of a price increase are even greater than the short-term effects.[[29]](#footnote-29)

27. Erickson points out in his response in a general sense that Mulder et al. also acknowledge in their additional paper that consumers are price sensitive, that this is not a controversial statement and that this is supported in the peer reviewed literature. He furthermore again explains his findings in the earlier review and the price increase which will arise in the circumstance 2 situation cited by Mulder above (competitors are less efficient than Shell). In addition, Erickson adds to this other potential price-increasing circumstances, such as the increase of the risk perception for new oil and gas production as a result of the judgment and the increasing cost price which this will cause (borrowing money will become more expensive for the producer because the risks for the producer's financiers will increase), the limited or delayed capacity on the part of competitors to expand production and the more limited granting of licenses by governments.[[30]](#footnote-30)

28. This latter point of the more limited granting of licenses for oil and gas exploration and production is also cited as an expected scenario in the Mulder paper. Mulder says in this respect: "It may nevertheless be expected, under the influence of the Paris Agreement, that countries will revise their licensing policy to an increasing degree, but that will not be the case for the time being."[[31]](#footnote-31)

29. That various countries, contrary to what Mulder has asserted, are in fact already modifying their licensing policy or have even already done so was discussed by Erickson in his review and was already discussed and demonstrated by Milieudefensie et al. in the summons.[[32]](#footnote-32) These facts have not been disputed or refuted by RDS and Mulder et al. Nor has it been disputed or refuted that certain oil and gas companies are not interested or will be less interested in new licences, for example BP, which has announced to want to reduce the production of oil and gas by 40% as of 2030.[[33]](#footnote-33)

30. For all of the reasons and evidence presented here and in the earlier court documents of Milieudefensie et al., the requested court order will not only lead to a reduction in emissions on the part of RDS and the Shell group, but will also lead to a reduction in global emissions. For the many aforementioned direct and indirect reasons, the requested order will help accelerate the energy transition, thereby contributing to combating dangerous climate change. The additional Mulder paper does not lead to another conclusion.

31. Milieudefensie et al. refers to the previously made offer to present evidence, most recently made by statements on the record of 11 and 16 December 2020 and in relation to the causality issue offers in particular evidence - in so far as on the basis of Article 150 of the Dutch Code of Civil Procedure it is bound to do so - in the form of additional documents and hearing expert witnesses of the Stockholm Environment Institute, and of additional documents and hearing as an expert witness Prof. dr. ir. Jan Rotmans.

Let this be entered in the record!

(signature)

Counsel,

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This case is being handled by R.H.J. Cox, D.M.J. Dexters, A.J.M. van Diem and S.J. Keuls

Paulussen Advocaten in Maastricht, the Netherlands

**Shell Lawsuit**

Prof.dr.ir. Jan Rotmans.

This argument concerns the issue 'what would be the effect if Shell were obliged to reduce its oil and gas production by 45%?' . Shell claims that this would not lead to less oil and gas production, nor fewer CO2 emissions on a worldwide scale. The argument is that other parties (oil and gas producers) would then take advantage of the concomitant gap this would lead to and the total production would remain the same.

By way of substantiation a study was presented by Prof. Machiel Mulder and colleagues, funded by Shell. In my view, this is a controversial and limited study which is scientifically invalid. It is a meagre research report and not a peer reviewed study, and it is also based on such weak foundations that it would not pass peer review. Nor is the lead author, Machiel Mulder, an energy transition expert, but a neo-classical economist who also looks at the energy issue from a purely economic perspective.

My most important objection to this study is that it is a static study, based on a simple substitution mechanism. It is like looking at a photo rather than a movie. However, the worldwide energy transition is in a turbulent, chaotic phase, which is characterised by instability and non-linear dynamics. In the energy transition we are in between two equilibriums, because all kinds of forces are having an effect on each other: market dynamics, geopolitical forces, climate policy, technological developments, social pressure and consumer behaviour. This implies that substantial changes are taking place which entail chaotic dynamics. Examples are global protests against failing climate policy, the increasing number of lawsuits against fossil energy companies, highly fluctuating oil prices (even negative prices this spring, a novelty), pension funds and investors who are deciding against investing in coal and oil, and large fossil energy companies which are in trouble.

Every intervention in this turbulent energy economy system must be viewed in the light of this complex dynamic. Including a forced reduction of 45% in Shell's oil and gas production. In order to analyse the effect of such an intervention you need a dynamic analysis and not a static analysis. In other words, you need a movie and not a photo. What Mulder et al. have applied is a static framework based on a simple substitution mechanism. One party (Shell) reduces production, other parties (competitors) fill the gap this leaves. This is an overly simplistic perception from an overly narrow perspective.

There was rightly strong criticism of this assertion, inter alia on the part of Peter Erickson of the Stockholm Environment Institute, who is an energy transition expert, who indicated that the Shell intervention would lead to price increases which in the short term would have an effect on the oil and gas market but which can also a structural effect, inter alia on the CO2 emissions. This price dynamic has not been sufficiently considered by Mulder et al.

There is more that Mulder et al. has not taken into account. Whoever wishes to adequately answer this question must not only look at the market dynamic but also at the system dynamic. This requires an integral view of the energy transition. Mulder et al. completely ignore this. The examples of the past which they cite relating to production restrictions for Iran after the revolution (1978) and Kuwait after the invasion by Iraq (1990) are illustrative of this. Both cases did not lead to less production on a global scale. These examples cannot be compared to the current situation. At the time there was not yet an energy transition, there was no climate policy with climate targets yet as part of binding climate conventions, there was still no electrification as a threat to the oil market, and there was no social and political pressure whatsoever on big oil companies which were still firmly in the saddle. At that time Shell still appeared to be a 'steady rock', intended for eternity. The global oil market was completely different at the time, it was still dominated by the OPEC countries then, which it has not been for a long time, with the US as a new oil power. The same applies with regard to the gas market.

In short, these examples are in no way representative of the current situation. The current oil market is now more unstable and volatile and the energy transition is in full swing, at a tipping point and in a stage of chaos. This means that a small intervention can have an enormous effect, due to self-reinforcing feedback. Suppose Shell were to produce 45% less, direct global consumption might drop proportionally, but the indirect effect of this intervention could be many times greater. Think of the precedent effect on other oil giants like BP and ExxonMobil. Shell, BP and Exxonmobil are keeping a close eye on each other, I know this from my own experience. They influence each other by coming up with climate-related plans for the long term. The influence these companies have on each other can lead to a chain reaction within the oil market.

Such an intervention could also have a large impact on the financial markets and investment funds, which can move away from oil at an accelerated pace. Recently big pension funds (like PFZW, a big global player) announced it would stop investments in oil because of the financial risks this entails. The ABP pension fund will follow in its steps soon. As this will increase the focus on sustainable energy sources instead of oil and gas, this can mean an enormous impulse for solar and wind energy, which are becoming increasingly cheaper in comparison to oil and gas. This intervention resulting from a lawsuit can lead to more of these lawsuits, bringing about a chain reaction. This can topple many dominoes, accelerating the energy transition.

For example, think of the Urgenda case which was started in 2015. The outcome of that lawsuit has had a lot of impact in the Netherlands, but indirectly it has had far more impact. Think of the influence in the political arena, the area of law itself, it has become a seminal case in law studies, the ripple effects domestically (e.g. the "Nitrogen” case), but particularly the ripple effects abroad. Similar climate lawsuits have been instituted in numerous countries. The Urgenda case has thus become a classic case and has globally set the stage for a new phase in how countries tackle climate change.

This lawsuit against Shell can have a comparable effect and set the tone for the climate approach of big oil companies.

Conclusion: the total effect of such an intervention is many times greater than the initial direct effect. Mulder et al. are not including these kinds of side effects at all in their narrow, static view. They are still assuming a situation of equilibrium, which is contrary to the current dynamic of the energy transition, which is in fact in between equilibriums. Their controversial study is therefore scientifically invalid and does not provide a reliable basis for a complex lawsuit such as this one.

**References**

- Mulder, M., Hulshof, D., Perey, P. & Rekker, L. (2020). Bedrijfsspecifieke beperking in exploratie en productie en het effect op het wereldwijde verbruik van fossiele energie: Een analyse toegespitst op de positie van Shell.

- Erickson, P. et al. (2020). Why fossil fuel producer subsidies matter. Nature 578, E1-E4.

- Lenton, M.T. et al. (2019). Climate tipping points - too risky to be against. Nature 575, 592-595.

- Rotmans, J., Boois, H. de, and Swart, R.J. (1990), 'An integrated model for the assessment of the greenhouse effect: the Dutch approach', Climatic Change 16, no.3, 331-356, 1990.

- Rotmans, J., Kemp, R. and van Asselt, M.B.A. (2001), 'More evolution than revolution: transition management in public policy', Foresight 3, no. 1, 15- 32, April 2001.

- Grin, J., Rotmans, J. and Schot, J. (2010), Transitions towards sustainable development', Routledge Publishers, UK.

- Rotmans, J. (2017), 'Change of Era: our world in transition', Boom Uitgeverij, Amsterdam.

- Hagedoorn, G., Rotmans, J. et al. (2019). 'Concerns of young protesters are justified'. Science 364, 139-140.

**Mini-Bio**

Jan Rotmans is professor of Transitions & Sustainability at Erasmus University Rotterdam. He graduated in 1986 on the basis of an integral climate model (IMAGE), obtaining his doctorate in the same area in 1990. In 1991 he became professor at Maastricht University in the area of simulation of human-environment relationships. He is a pioneer in integral climate models, in the discipline of Integrated Assessment, and in the discipline of Transition Studies. He has 250 scientific publications to his name and has written 30 books about climate, sustainability and transitions. He is founder of ICIS (International Centre for Integrative Studies) in Maastricht, DRIFT (Dutch Research Institute for Transitions) in Rotterdam, the Kennisnetwerk Systeem Innovaties en Transities (KSI) and the Sustainability Transitions Research NetWork (STRN). He is also co-founder of Urgenda, Nederland Kantelt and Zorgeloos.

He is an international authority in the area of transitions & sustainability, and advises international and national public bodies and companies, such as the UN, EU, OECD, the Dutch government and multinationals, including Shell and IKEA. He has managed a number of prestigious global and European research projects. He developed the first integral climate model in the world, IMAGE, which is still being developed after 35 years and is intensively used in the international climate negotiations. He was involved in the founding of the UN climate panel IPCC within which he was active for years. For more information see www.janrotmans.nl

1. Notes on oral arguments 8, paras. 43 -72 and notes on oral arguments 9, paras. 1-21. [↑](#footnote-ref-1)
2. Ibid. [↑](#footnote-ref-2)
3. Ibid. [↑](#footnote-ref-3)
4. Ibid, see furthermore for political influence, inter alia, notes on oral arguments 1, paras. 83-129, see furthermore for the lock-in problem, inter alia, the example set out in notes on oral arguments 3, paras. 56-60 and the statement on the record explaining the amendment of claim, para. 23, see furthermore for the need to deviate from a business-as-usual scenario, inter alia, notes on oral arguments 5, paras. 36-44, see furthermore for the flywheel effect to be generated by non-state actors, inter alia, notes on oral arguments 7, paras. 26-29. [↑](#footnote-ref-4)
5. See for the important role of non-state actors, inter alia, notes on oral arguments 1, paras. 130 et seq., where it is also explained that said active role of non-state actors are all the more decisive, because the coming ten years are crucial in tackling climate change. [↑](#footnote-ref-5)
6. See Exhibit RK-35, p. 2 "The research for this report was carried out on the request of De Brauw Blackstone Westbroek N.V. and with the financial support of Royal Dutch Shell plc." [↑](#footnote-ref-6)
7. Exhibit 338, p. 1. [↑](#footnote-ref-7)
8. Exhibit 338, p. 1. [↑](#footnote-ref-8)
9. Exhibit 338, pp. 1 and 2. [↑](#footnote-ref-9)
10. This can also be less in the event of a 45% reduction in emissions, see inter alia notes on oral arguments 9, para. 11. [↑](#footnote-ref-10)
11. The consequential effect which can emanate from the judgment and the chain reaction which can be the result thereof were discussed in detail in notes on oral arguments 2 (admissibility/standing) paras. 112-128. [↑](#footnote-ref-11)
12. Exhibit 338, pp. 2 and 3. [↑](#footnote-ref-12)
13. See notes on oral arguments 8, paras. 55 et seq. [↑](#footnote-ref-13)
14. Notes on oral arguments 8, para. 67. [↑](#footnote-ref-14)
15. Exhibit RK-37, p. 2 under 2. [↑](#footnote-ref-15)
16. Exhibit RK-37, p. 2 under 2. [↑](#footnote-ref-16)
17. Exhibit RK-37, p. 2 under 2. [↑](#footnote-ref-17)
18. Exhibit RK-37, p. 7 under 6(a). [↑](#footnote-ref-18)
19. Notes on oral arguments 8, para. 70. [↑](#footnote-ref-19)
20. Exhibit 333, table p. 2. [↑](#footnote-ref-20)
21. Notes on oral arguments 8, para. 70. [↑](#footnote-ref-21)
22. Notes on oral arguments 8, para. 80. [↑](#footnote-ref-22)
23. Notes on oral arguments 8, para. 69. [↑](#footnote-ref-23)
24. Notes on oral arguments 8, para. 67. [↑](#footnote-ref-24)
25. Exhibit RK-37, p. 4 under 4. [↑](#footnote-ref-25)
26. Exhibit RK-37, p. 4 under 4. [↑](#footnote-ref-26)
27. Exhibit 339, under 2. [↑](#footnote-ref-27)
28. Notes on oral arguments 2, para. 116. [↑](#footnote-ref-28)
29. Exhibit 339, under 2. [↑](#footnote-ref-29)
30. Exhibit 339, under 1. [↑](#footnote-ref-30)
31. Exhibit RK-37, p. 8 under 7. [↑](#footnote-ref-31)
32. Summons, para. 779 and Exhibit 337, p. 3 under 4, also cited in notes on oral arguments 8, para. 69. [↑](#footnote-ref-32)
33. Notes on oral arguments 8, para. 70 with references. [↑](#footnote-ref-33)