

# 50 years Jan Tinbergen and Roefie Hueting

1969 – 2019

- Social Welfare Function (SWF)
- *standard* National Income (NI)
- *environmentally Sustainable* National Income (eSNI)
- their distance  $e\Delta = NI - eSNI$

Thomas Colignatus

*Sheets for the Politicologen-etmaal*, Antwerp, June 14 2019

Dutch-Flemish Political Science day. Workshop 12: Information and policy

<http://thomascool.eu/Papers/Environment/2019-04-17-THAENAES.pdf> (draft)

<http://thomascool.eu/Thomas/Nederlands/Wetenschap/Artikelen/2019-05-02-Aanpak-Tinbergen-Hueting.pdf> (Dutch)

<https://zenodo.org/communities/re-engineering-math-ed> (math education: applied math and didactics)

## Contents of this presentation

1. Overview of work and results by Tinbergen & Hueting
2. Multidisciplinarity: ecologists, economists, statisticians, academics, civil servants, policy makers, general public  
– and now also political scientists
3. Misunderstandings, hobby horses and *suspected* sabotage
4. **Topic of this workshop:**
  - “Information and policy: on which information do people base their policy?”
  - “We want to study the flow of information to policy.”
  - Dispute about quality of information
  - Dispute about quality of expertise

“The question is not *whether* the Netherlands will disappear under water, but *when*.”

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🕒 11 juli 2018

🕒 Leestijd 2 minuten

## De vraag is niet óf Nederland onder water verdwijnt, maar wannéér

De houdbaarheid van Nederland is eindig, schrijft klimaatwetenschapper *Peter Kuipers Munneke*. De politiek moet zich afvragen voor wie ze dijken ophogen: voor de komende drie of de komende tien generaties?

Obviously Holland can't stop global warming **alone**

*Dutch self-interest* in ecological survival:

- If the Netherlands wants to remain above water, the whole globe must be environmentally sustainable.
- Their only instruments are words: science and diplomacy.
- The Dutch depend upon arguments that convince the world.

*Some altruism* in ecological survival – a matter of *civilisation*:

- The approach by Tinbergen and Hueting in 1969-2019
- An environmentally sustainable world is for everyone.

## Commitment by Jan Tinbergen (1903-1994)

- (1) Tinbergen helped create the System of National Accounts (SNA) and economic modeling with SNA. He understood these aspects of eSNI.
- (2) Tinbergen looked at issues from the angle of optimisation of welfare.
- (3) Tinbergen contacted Hueting w.r.t. an article in 1968, and arranged that CBS appointed Hueting in 1969 with the explicit objective to correct NI for damages to the environment.
- (4) Tinbergen wrote a preface to the 1980 English translation of Hueting's 1974 thesis.
- (5) Tinbergen wrote about aspects of the environment (like "counterproduction" in his book on the optimal order), and likely (educated guess) didn't feel it necessary to do more, since he knew Hueting was looking into it.
- (6) Tinbergen arranged that environmental economists (i.e. for this area of expertise) wrote recommendations for an UNEP prize for Hueting.
- (7) The paper Tinbergen & Hueting (1991) gives his support on content.

## ***GNP and market prices***

***Wrong signals for sustainable economic success that mask environmental destruction***

*Jan Tinbergen and Roefie Hueting*

### **Society is steering by the wrong compass**

The market is rightly considered a mechanism that generates manufactured goods and services according to consumer preference. This mechanism allows culture

This situation has changed drastically. Over the last forty–five years, the period in which, based on the above reasoning, growth of national income has been given

Book 2019

# National Accounts and environmentally Sustainable National Income



$$e\Delta = NI - eSNI$$

Roefie Hueting  
Bart de Boer

## Praise for Hueting's work



Prince Bernhard (*World Wildlife Fund* WWF) asked for a copy of the thesis, May 1 1974  
National Archives, wikimedia commons





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## Roelof Hueting

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Roelof Hueting

Mr. Roelof Hueting founded the Department of Environmental Statistics at The Netherlands Central Bureau of Statistics in 1969. The Department produces statistics on the whole field of the

**"Hueting has in my opinion quite rightly regarded environmental scarcity as something inside, not outside, economics."**

Nobel laureate Jan Tinbergen (1980)

**"The ideas about eSNI have originated from CBS (Hueting). CBS is proud of that."**

CBS Director-General Ruud van Noort (2000)

Problem: CBS Statistics Netherlands (1) still keeps economics and the environment apart, and (2) publishes GDP-growth as "economic growth".

## Painting by Hans van den Doel (1937-2012)



Jan Tinbergen (1903-1994)  
Pieter Hennipman (1911-1994)

Amartya Sen (1933)

Roefie Hueting (1929)  
Hans van den Doel (1937-2012)  
Jos de Beus (1952-2013)

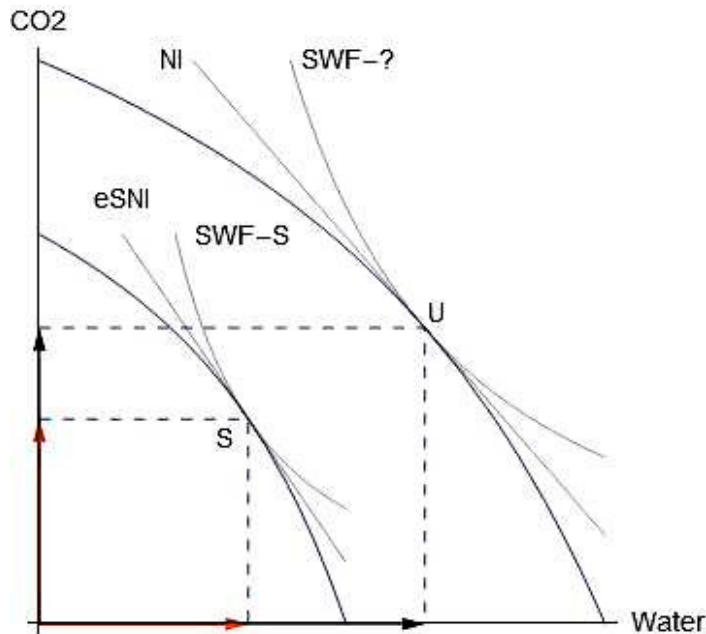
Reproduced with permission by  
Van den Doel's heirs

## Aggregation of preferences – Social Welfare Function

1. There is always a (Bergson) Social Welfare Function (SWF). This is based upon processes of power (and potentially also cardinal utility).
2. When you assume ordinal utility then there arise paradoxes (seeming contradictions), that can be used for “impossibility theorems” (Arrow, Sen). Ordinality causes *measurement problems* for the SWF.
3. Be careful with conclusions on the *meaning* and *impact* of theorems:
  - (i) assumptions, (ii) deduction, (iii) the question remains what the assumptions and conclusions really mean: the issue of validity.
  - *Arrow’s Impossibility Theorem on Social Choice* and *Sen’s Theorem on the Impossibility of a Paretian Liberal* are examples of **correct deduction** but with **incorrect interpretation** by these authors.

Sheets Politicologenetmaal 2018: <https://zenodo.org/record/1269392>

## Economic optimisation with SWF and PPF



- Production Possibility Frontier (PPF)
- **NI** is a weighted sum of the **use** of functions at current market prices at **U**.
- **eSNI** is a weighted sum of the function **standards** at shadow prices at **S**.
- Whether **SWF-?** or **SWF-S** is *highest* is determined by *hypotheses*.
- $e\Delta = NI - eSNI$

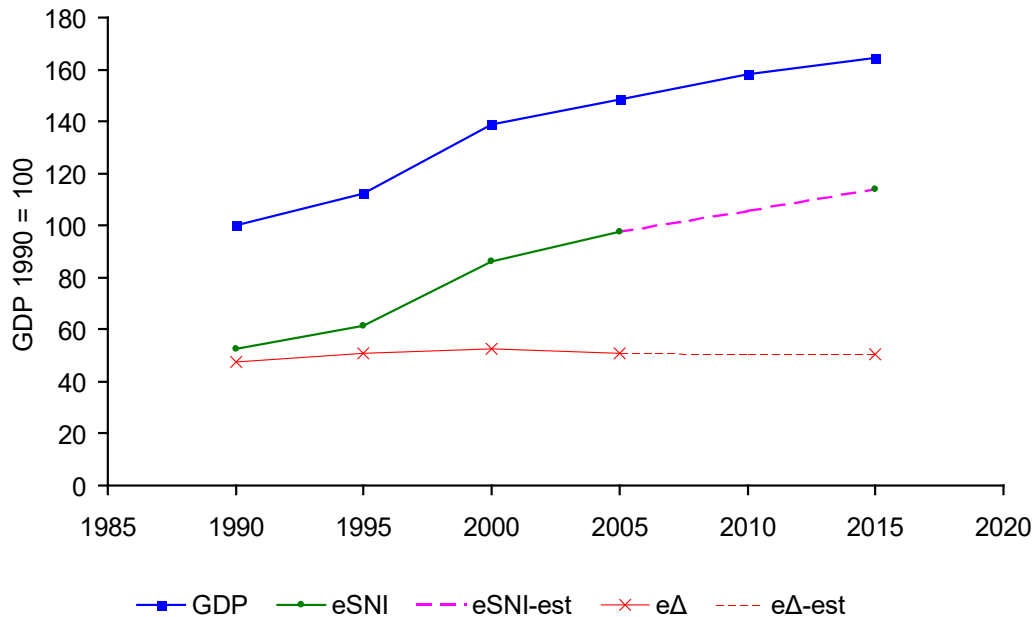
## Huetting's contribution to economic science itself

(1) Integration of economics and environment.

(2) Clarification that the *measurement* of national income is *conditional* to *assumptions* on *preferences*.

- If you assume that economic agents want the world as it is (*Candide, The best there is*), then standard national income is the relevant measurement of national income.
- If you assume that economic agents prefer environmental sustainability, because of the precautionary principle and wish to safeguard the environment for future generations, then eSNI is the relevant measurement of national income.
- We cannot know the preferences. Taking observations as “evidence” of income & preferences is an *assumption* again.

## Development of Dutch NI, eSNI and e $\Delta$ in 1990 – 2015



# Development of Dutch NI, eSNI and e $\Delta$ in 1990 - 2015

*A proof of concept*

	1990	1995	2000	2005	2010	2015	per year
GDP	100	112.2	138.8	148.3	157.9	164.4	2.0%
eGDP = eSNI	52.6	61.3	86.2	97.4		<i>114.0</i>	3.1%
Distance, e $\Delta$	47.4	50.9	52.6	50.9		<i>50.4</i>	0.2%
%	53%	55%	62%	66%		<i>69%</i>	1.1%
eFootprint	1.9	1.8	1.6	1.5		<i>1.4</i>	

Hueting & De Boer (2018, 2019a). e $\Delta$   $\approx$  NNI – eSNNI. eFootprint = 100 / %

GDP = Gross Domestic Product. NNI = Net National Income. Italics: *rough estimate*

NB. Statisticians provide this information. Policy makers decide what to do with it.



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Vaststelling van de begrotingsstaat van het Ministerie van Volkshuisvesting,  
Ruimtelijke Ordening en Milieubeheer (XI) voor het jaar 2004

**nr. 125**

**BRIEF VAN DE MINISTER VAN ECONOMISCHE ZAKEN**

*Aan de Voorzitter van de Tweede Kamer der Staten-Generaal*

*Den Haag, 1 juli 2004*

Conform eerdere toezeggingen van Staatssecretaris Van Geel en mij doe ik u het RIVM-rapport *Sustainable National Income: A Trend Analysis for the Netherlands for 1990–2000* toekomen<sup>1</sup>. Het rapport bevat berekeningen van het Duurzaam Nationaal Inkomen (DNI) volgens Hueting voor het jaar 2000 en een trend-

Om de toekomst van het DNI toch te waarborgen heeft collega Van Geel met het RIVM afgesproken dat het RIVM in de toekomst de verantwoordelijkheid voor DNI-berekeningen op zich neemt en dat zij het DNI periodiek (eens per vijf jaar zoals dat ook nu gebeurt) zal gaan berekenen. Deze afspraak zal nog formeel geregeld worden. Net zoals bij eerdere berekeningen zal het CBS de benodigde data leveren en zal het Instituut voor Milieu Vraagstukken (IVM, Universiteit van Amsterdam) betrokken worden om de modelberekeningen uit te voeren. Het Ministerie van VROM zal aan het RIVM voldoende financiële middelen beschikbaar stellen om het CBS en het IVM te kunnen betalen. Het RIVM zal het DNI publiceren in reguliere RIVM-publicaties zoals de Milieu Balans of de Duurzaamheidsverkenning. Conform de wens van de Kamer kan dat in samenhang met onderzoek naar en publicatie van andere duurzaamheidsindicatoren.

(...)

Als laatste, ik heb met Staatssecretaris Van Geel afgesproken dat hij het DNI-dossier overneemt en dat eventuele vragen over het DNI in het vervolg aan hem gericht kunnen worden.

Mede namens de Staatssecretaris van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer,

*De Minister van Economische Zaken,*

*L. J. Brinkhorst*

Problem: RIVM stopped calculating and publishing eSNI after 2008.

There are no such calculations for the years of observation of 2010 and 2015.

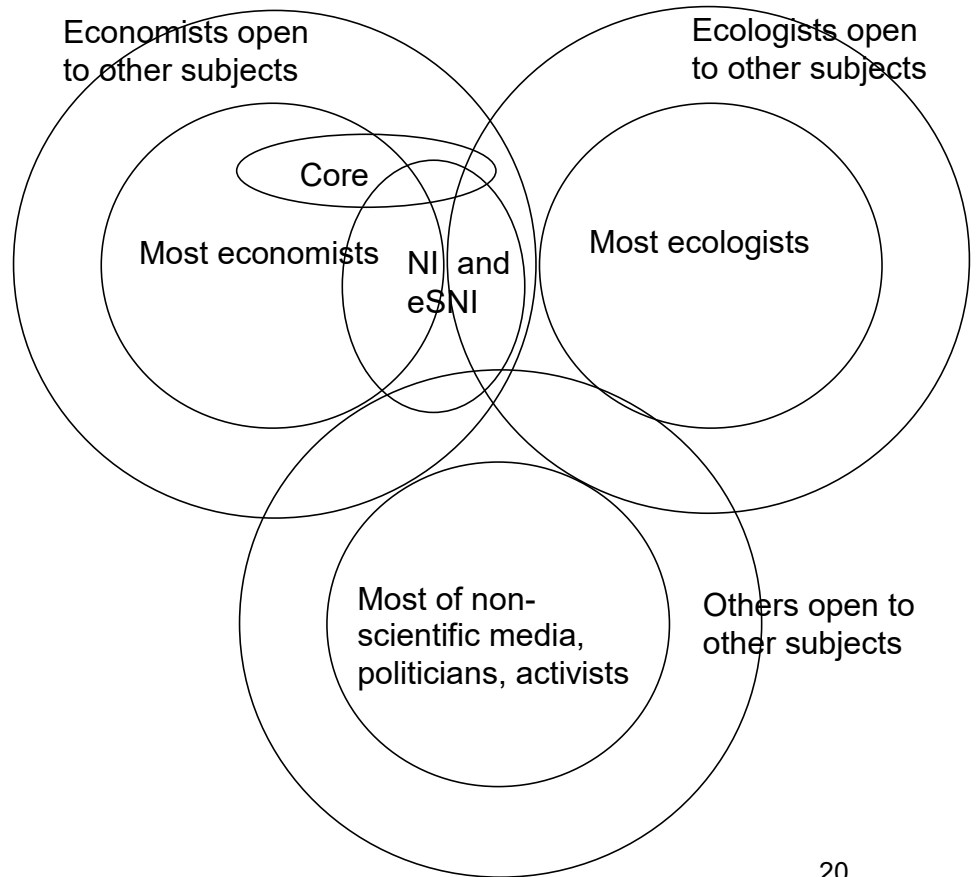
There was a reorganisation to PBL ...

## Different communities

Core = core of economics

Open mind of economists: *in particular to the challenge of ecological survival*

Research versus policy versus social activism



## International setting 1969-2019

- Warnings by ecologists since the 1960s: *You only discover ecological collapse when it is too late to do something about it.*
- Common resistance against environmental policies since the 1960s.
- “Economic growth” pursued at the destruction of the environment.
- The world of finance has a vested interest in exploitation.
- Example: economic theory has argued *from the start* that a carbon tax would be most efficient. A 2019 restatement reads as a first-year student course in economics. <sup>1</sup> Instead, policy makers have been distracting from a carbon tax, and have set up an “emission trading system” that subsidises current polluters. The true issue is one of *Public Choice*: current incentives work against scientific advice.

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<sup>1</sup> <https://www.econstatement.org> with 27 Nobel laureate economists

## Communities that are not open to eSNI and e $\Delta$

- (1) Mainstream economists have been negligent about the environment for a long while. William Nordhaus got his Nobel Prize in economics only in 2018. Mainstream economics still has the *wrong compass*, namely by taking GDP-growth as “economic growth”.
- (2) Nordhaus looks at economic policy and Hueting looks at statistics.
- (3) Statisticians are deaf to the approach. At CBS Statistics Netherlands:
  - “This is not statistics but politics” (Keuning)
  - “eSNI is disputable and CBS cannot publish it itself” (Van Tuinen)
  - Adopt the view by Van den Bergh, below (Hoekstra & Smits)
  - Hoekstra gives biased advice to a Dutch Parliament committee
- (4) Ecologists at a distance of economics (but still assigning value):
  - refer to *thermodynamics* and reject notions of welfare and income
  - give “function” another definition (i.e. neglect “environmental function”) and stop referring to Hueting’s work (burking) (De Groot)

- (5) Opschoor (VU): “environmental user space” or “ecospace”:
  - selects only 1 element from Hueting’s more complex discussion
  - for practical purposes there is only point S (a space of 1 point)
- (6) IVM-team that did the calculations, Verbruggen et al. (VU): abuse of the Alleingang scenario (“Exclusively-NL scenario”) which suggests:
  - the definition of eSNI would be too vague (they abuse it)
  - the outcomes show large variations (they don’t use the definition)
  - policy makers don’t know what to do with  $eSNI \approx \frac{1}{2} NI$  (because IVM doesn’t explain that you must look at  $e\Delta = NI - eSNI$  over time)
- (7) Van den Bergh (VU, ICREA): with “agrowth”:
  - wants to focus on SWF instead of income (child and bathwater)
  - rejects NI and eSNI as inadequate for being a SWF (but income isn’t welfare, and eSNI hasn’t been proposed as welfare)
  - even rejects  $e\Delta$  as a “meaningless notion”
- (8) Cliometricians develop an index but look at “emissions per capita” while the environmental burden is *integral* and not *per capita*.

- (9) Some economists are not open to the notion of “asymmetric bookkeeping” (De Haan, Heertje)
- (10) Overly focus on own approaches (Daly, El Serafy, World Bank)
- (11) PBL Netherlands Environmental Assessment Agency (Dietz):
  - selectively follow Van den Bergh, namely still accept NI
  - “eSNI is a composite index [for welfare]” (but it is income and not welfare, and the relevant variable concerns  $e\Delta = NI - eSNI$ )
  - PBL is not responsible for calculating it (but who then is, after the reorganisation of RIVM into MNP into PBL ? Dietz doesn’t enquire)
  - neglects that  $e\Delta$  would likely be the main PBL target variable.
- (12) Dutch Parliament might have lost interest in eSNI, and allows the non-calculation, and doesn’t question the misrepresentation by PBL. If this is a political decision then this is politics. If the underlying cause is **distorted information** then this requires analysis about the flow of information and the role of advisors.



Topic of this workshop: On which information do people base their policy ? Disputes about quality and expertise

- The Tinbergen & Hueting approach has had advance and adversity. On balance, 30 years were lost for policy making
- There is a curious resistance at academia against work done at statistical and policy oriented research institutes
- There is too little awareness that a complex problem requires multidisciplinary
- Grand failure of the peer-review system. Journal editors allow the misrepresentation of eSNI and  $e\Delta$
- Researchers lack enough checks and balances: hearing only what they want to hear, misrepresenting other work, burking.

# Political Economy versus Political Science

Colignatus (2000, 2011), “*Definition & Reality in the General Theory of Political Economy*” (DRGTPE) diagnoses the failure of the **Trias Politica** system of checks and balances, and provides mathematical and empirical evidence for the extension with a fourth branch of an **Economic Supreme Court** per nation.

<https://abc.nl/book-details/definition-reality-in-the-general-theory-of-political-economy/g9789080226302>

Colignatus (2018), “*One woman, one vote. Though not in the USA, UK and France*” (1W1V) diagnoses that **political science on electoral systems** is still locked in the humanities, and thus **no science** yet.

<https://mpira.ub.uni-muenchen.de/84482>

Political science might advise on this case – *but must be a science*.

## Conclusions

- (1) The damage to the global environment is not just a result of policy and the choices that have been made politically, but also a result of the infrastructure that provides **information** for such policy making. The scientific world better takes stock of the mess in science on handling information. The available information is currently not used. The “information” that is used generates a wrong compass.
- (2) DRGTPE advised the creation of an **Economic Supreme Court** per nation, and used the example of mass unemployment and the role of planning. Another example is the environment and the role of statistics, with the approach by Tinbergen and Huetting.
- (3) Political science might advise on this – *but must be a science*. This requires a firm foundation also in mathematics, statistics, modeling, economics, ecology, political economy, and practical policy advice. Students are advised to first learn a science before “political science”.