Importance of Impact

‘The next step’

Dr. Ingeborg Meijer
Centre for Science and Technology Studies, Leiden University

LDE, Open access week, Delft
27 October 2016
Outline

• Introduction assessment: from SEP to Impact matrix
• 2 Examples
  – Quality indicators SSH (KNAW)
  – Biomedical sector, including some quantitative elements
• Reflection on the CWTS evaluation (2015)
• The next step: what do we need?
Introduction
The Dutch assessment landscape

• The 2003 Standard Evaluation Protocol (SEP) of universities stirred up thinking on assessment
  – Royal Academy of Sciences (KNAW) initiated studies on the assessment of medicine, SSH and engineering
  – This resulted in a number of reports, integrated into the next SEP
  – The reports served as ‘blueprint’ for the design of SEP2015-2020

• Parallel, growing national and international awareness
  – Internationally, the DORA declaration in 2012 and the UK REF protocol
  – Nationally, by the Science in Transition movement

• Consequences for the SEP 2015 >>
New SEP15-20: triple focus

- Research Quality (no production)
- Relevance to society
- Viability (the extent to which the unit is equipped for the future)

<table>
<thead>
<tr>
<th>Demonstrable Products</th>
<th>1. Research products for peers</th>
<th>4. Research products for societal target groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Examples of indicators:</td>
<td>Examples of indicators:</td>
</tr>
<tr>
<td></td>
<td>- Research articles (refereed vs. non-refereed)</td>
<td>- Reports (for example for policymaking)</td>
</tr>
<tr>
<td></td>
<td>- Scientific/scholarly books</td>
<td>- Articles in professional journals</td>
</tr>
<tr>
<td></td>
<td>- Other research outputs (instruments, infrastructure, datasets, software tools or designs that the unit has developed)</td>
<td>- Other outputs (instruments, infrastructure, datasets, software tools or designs that the unit has developed) for societal target groups</td>
</tr>
<tr>
<td></td>
<td>- Dissertations</td>
<td>- Outreach activities, for example lectures for general audiences and exhibitions</td>
</tr>
<tr>
<td></td>
<td>- ...</td>
<td>- ...</td>
</tr>
<tr>
<td></td>
<td>- ...</td>
<td>- ...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Demonstrable use of products</th>
<th>2. Use of research products by peers</th>
<th>5. Use of research products by societal groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Examples of indicators:</td>
<td>Examples of indicators:</td>
</tr>
<tr>
<td></td>
<td>- Citations</td>
<td>- Patents/licences</td>
</tr>
<tr>
<td></td>
<td>- Use of datasets, software tools, etc. by peers</td>
<td>- Use of research facilities by societal groups</td>
</tr>
<tr>
<td></td>
<td>- Use of research facilities by peers</td>
<td>- Projects in cooperation with societal groups</td>
</tr>
<tr>
<td></td>
<td>- Reviews in scientific/scholarly journals</td>
<td>- Contract research</td>
</tr>
<tr>
<td></td>
<td>- ...</td>
<td>- ...</td>
</tr>
<tr>
<td></td>
<td>- ...</td>
<td>- ...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Examples of indicators:</td>
<td>Examples of indicators:</td>
</tr>
<tr>
<td></td>
<td>- Science awards/scholarly prizes</td>
<td>- Public prizes</td>
</tr>
<tr>
<td></td>
<td>- Research grants awarded to individuals</td>
<td>- Valorisation funding</td>
</tr>
<tr>
<td></td>
<td>- Invited lectures</td>
<td>- Number of appointments/positions paid for by societal groups</td>
</tr>
<tr>
<td></td>
<td>- Membership of scientific committees, editorial boards, etc.</td>
<td>- Membership of civil society advisory bodies</td>
</tr>
<tr>
<td></td>
<td>- ...</td>
<td>- ...</td>
</tr>
<tr>
<td></td>
<td>- ...</td>
<td>- ...</td>
</tr>
</tbody>
</table>
Universities in 2021: More differentiation in profiles?

High Academic

Quality

Low Academic

Low Society

Relevance

High Society

SEP CAT 1: “Excellent”

SEP CAT 2: “Very good”

SEP CAT 3: “Good”

SEP CAT 4: “Unsatisfactory”

Wilfred Mijnhardt – Erasmus Research Institute of Management
The added value created by connecting research to societal practice, which is based on productive interaction and is complementary to the scientific quality.
# Universiteit Leiden – group level

## Impact Matrix

<table>
<thead>
<tr>
<th>Interaction with &gt;</th>
<th>Academic field (scientific interactions)</th>
<th>Professional field (professional interactions)</th>
<th>Commercial sector / (non) Governmental sector (interactions with companies / enterprises / public entities)</th>
<th>Society at large (public interactions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deliverables ✓</td>
<td>Outreach activities for/with peers</td>
<td>Outreach activities for/with professionals</td>
<td>Outreach activities for/with specific companies and public entities</td>
<td>Dissemination of academic insights to general audiences</td>
</tr>
<tr>
<td>Knowledge production and exchange (results)</td>
<td>Publications (articles, books, comments) (refereed vs. non-refereed, open access)</td>
<td>Publications / interviews in professional journals, manuals, books</td>
<td>Publications / interviews in business or governmental media, manuals, books</td>
<td>General publications (books, articles / comments / interviews in papers, public journals, magazines)</td>
</tr>
<tr>
<td></td>
<td>Outcomes of specific research projects, dissertations (PhD supervising) included</td>
<td>Lectures for professionals</td>
<td>Lectures for employees, officials / round table discussions</td>
<td>Public lectures</td>
</tr>
<tr>
<td></td>
<td>Education to bachelor / master students</td>
<td>Projects / events with/for professionals</td>
<td>Collaborative projects / events with companies or public entities</td>
<td>Open access</td>
</tr>
<tr>
<td>Knowledge utilization (effects)</td>
<td>Active participation in scientific/academic associations</td>
<td>Use of research outcomes by professionals</td>
<td>Use of information, instruments, models, processes, software tools or designs that the unit has developed or obtained</td>
<td>MOOCs, etc.</td>
</tr>
<tr>
<td></td>
<td>Use of information, instruments, infrastructure / research facilities, datasets, tests, labs, models, processes, software tools or designs that the unit has developed or obtained</td>
<td>Advices to professionals</td>
<td>Contributions to clusters (Bio Science Park, Museums, etc.), and standardization committees (CEN, ISO)</td>
<td>Consultancy / Policy advice</td>
</tr>
<tr>
<td></td>
<td>Citations</td>
<td>Support of young professionals through a center of entrepreneurship, or incubators</td>
<td>Consultation of expertise to aspects of societal importance (i.e. membership of committees, councils, etc.)</td>
<td>Contribution of expertise to aspects of societal importance (i.e. membership of committees, councils, etc.)</td>
</tr>
<tr>
<td>Knowledge exploitation (revenues)</td>
<td>Marks of recognition from peers</td>
<td>Returns/gains through:</td>
<td>Returns/gains through:</td>
<td>Returns/gains through:</td>
</tr>
<tr>
<td></td>
<td>Research grants / Science awards</td>
<td>Contract research</td>
<td>Contract research (including consultancy)</td>
<td>Public prizes</td>
</tr>
<tr>
<td></td>
<td>Membership of scientific committees, editorial boards</td>
<td>Courses / training for professionals (post-academic education)</td>
<td>Professional training/courses (post-academic education)</td>
<td>Open courses</td>
</tr>
<tr>
<td></td>
<td>Appointment as guest scholar/lecturer</td>
<td>Participation in advisory boards (monitoring-, evaluation committees)</td>
<td>Participation in advisory boards (monitoring-, evaluation committees)</td>
<td>Appointments / positions paid by societal entities</td>
</tr>
<tr>
<td></td>
<td>Positions in rankings and EU-networking activities and alliances</td>
<td>Use of research facilities by professionals</td>
<td>Use of research facilities of and by companies / other bodies</td>
<td>Employment / jobs</td>
</tr>
<tr>
<td></td>
<td>External funding</td>
<td>Practices / entrepreneurship (spin outs / spin offs)</td>
<td>Patents / licences / disclosures / revenues</td>
<td>NWO (Topsectoren included), EU (ERC, Collaborative programmes); other sources</td>
</tr>
<tr>
<td></td>
<td>NWO (Topsectoren included), EU (ERC, Collaborative programmes); other sources</td>
<td>Secondary positions</td>
<td>Budget for Impact</td>
<td></td>
</tr>
</tbody>
</table>
Societal ... of research

• Impact
  – Long term
  – Attribution
  – Defined by ‘users’

• Relevance
  – Intrinsic to topic
  – Comparison of societal needs
  – Research agenda setting

• ‘Quality’
  – Interaction science and society
  – Outreach to specific stakeholders
  – Responsibility

• It is not about doing applied research, it is about the next step
Example
SSH & Metis

9
Challenges Social Sciences and Humanities (SSH)

• Quality indicators and the role of bibliometrics
• Societal quality often not economic
• Societal quality often implicit or indirect
• Where is the division between scientific and societal?
Difference between the internal registration system & representation WoS

- Dominance university hospital in WoS realm extremely visible
- Law and Humanities ‘disappear’ in WoS realm
Composition of the output of the university in METIS

- The category General is in some cases voluminous.
- All units do have journal publications!
Example 2
Biomedical
Challenges (bio)medical

• Balancing scientific publication and ‘other activities’
• There is more than patents, licenses and spin offs.
• Time lag further developments and attribution
• How can we trace changes in healthcare practice? > disease coupling, guidelines, Dutch journal
• Who is responsible for collecting evidence
• Societal is not as ‘objective’ as scientific
LUMC - pilot

- **Step 1** – Indicator occurrences
  Number of occurrences of each indicator for every department is related to the average of that indicator for all departments

- **Step 2** – Weighting system
  - Ranking of indicators in relation to each other for each target group
  - Calculation of weighting factors (within each societal target group and between target groups)

- **Step 3** – Societal quality per indicator
  Result of steps 1 and 2 per department and per indicator

- **Step 4** – Societal quality per target group and total societal quality
  Calculation of societal quality based on the indicator societal quality scores (step 3)
Societal quality score per target group

LUMC departments

- Total general public societal quality
- Total healthcare professionals societal quality
- Total private sector societal quality
Term map research funded by charity
Termmap, cited publications funder in guidelines
Reflection on CWTS evaluation
Filling the Impact Matrix

- Bottom up
- 1st version: Huge list of evidence of knowledge production, knowledge transfer, knowledge use in the different domains
- 2nd version: Clustering of types of ‘evidence’ – e.g. x international presentations for customers; y courses given.
- But: cohesion and context is lacking
So this is what we did in the Self Evaluation report

• 2 show cases (each one page) as part of the main text:
  – Rankings
  – Assessment of biomedical research

• A la REF: short description of the research topic and then:
  – Describe the outreach of that research into different domains
  – Illustrate with info and numbers from D1 table that relate to showcase.
  – Make explicit the ecosystem of research in the context of the users.

• End up with more strategic evaluation, than output oriented evaluation
Users of Leiden Ranking

Users in policy

NOWT

150 mail s/year

600 newsletter

50K BV

Committees

58/1.5 y Press

150 mails/year

Leiden Manifesto

Science in Transition

Brazilian ranking

U-multiranking

Other rankings

Rankings Indicator Pub. culture

Public debate

7 languages

20 visitors/day

34/62 mentions in Dutch parliament

58/1.5y Press

50K BV

Users in policy

Users of Leiden Ranking

NOWT

ECOSYSTEM

58/1.5y Press

50K BV

Committees

58/1.5y Press
REF2014 “The nature, scale & beneficiaries of research impact
The Next Step
Conclusions so far...

• Scientists see valorisation and societal impact as separate from methods to assess sciences (i.e. publication and citations)
  – Activities for society are not necessarily perceived as positive
  – Societal output is part of ‘other’ obligations; not related to science
  – Basic research vs Long term societal impact; is not my responsibility

• University management see science assessment and ‘third’ mission of universities as separate
  – Development of scientific careers
  – Valorisation is task of separate policy officer

• Stakeholder roles still unclear – absorption of science
  – no societal mission and objectives at research group level

• Research management information systems
  – Qualitative versus quantitative discussion
  – Counting beans vs contextualisation
  – WoS of societal relevance
And what to do next?

- Mixed methods – combine qualitative and quantitative approaches to contextualize
- Avoid ‘number game’ – responsible metrics
- Integrate science & society – include stakeholders in evaluation panel
- Individual career vs. societal mission/objectives
- Focus on processes rather than outputs
Responsible metrics can be understood in terms of:

- **Robustness**: basing metrics on the best possible data in terms of accuracy and scope;

- **Humility**: recognizing that quantitative evaluation should support – but not supplant – qualitative, expert assessment;

- **Transparency**: keeping data collection and analytical processes open and transparent, so that those being evaluated can test and verify the results;

- **Diversity**: accounting for variation by field, using a variety of indicators to reflect and support a plurality of research & researcher career paths;

- **Reflexivity**: recognizing the potential & systemic effects of indicators and updating them in response.

(see also The Metric Tide report, and the Leiden Manifesto 2015)
RRI dimensions

- Engagement
- Gender equality
- Science education
- Open Access
- Ethics
- Governance

(EC 2012)
Evaluation model of societal quality measurement

• Practical guide: based on logical models and productive interaction concepts

Step 1
Define societal mission & objectives

Step 2
Describe interactions with societal stakeholders/sector

Step 3
Describe results & added value of societal interactions

Step 4
Reflection on realising societal quality
Thank you for your attention!

Want to know more.....contact me at

i.meijer@cwts.leidenuniv.nl
Individual level: ACUMEN portfolio

Give researchers a voice in evaluation

- evidence based arguments
- shift to dialog orientation
- selection of indicators
- narrative component
Career Narrative

Links expertise, output, and influence together in an evidence-based argument; included content is negotiated with evaluator and tailored to the particular evaluation.

**Expertise**
- scientific/scholarly
- technological
- communication
- organizational
- knowledge transfer
- educational

**Output**
- publications
- public media
- teaching
- web/social media
- data sets
- software/tools
- infrastructure
- grant proposals

**Influence**
- on science
- on society
- on economy
- on teaching