Forskning på bærekraftsparametre

- Ny terminologi, nye fagområder
- Fra prat til fakta
- Viktige tematikk i fremtidig markedskommunikasjon
- Vi blir overvåket og fotfulgt av miljøorganisasjoner
- Argumentasjon er til dels ubalansert, og faktagrunnlaget for analyser og konklusjoner er tynt
- Vi arbeider i nettverk for å utvikle standarder
- Kunnskap er nødvendig for å gjøre de rette prioriteringer
- Oppdrettsnæringen må øke kunnskapsnivået ved å selv initiere slik forskning, våre egne data og analyser er gamle

Feed ingredients; we used to look for:

Energy

Protein

Amino acids

Vitamins

Fatty acids

Digesti-bility

Minerals

PRICE

Feed ingredients; new terms:

Green-house gases

Contami-nants

Food safety

Food miles

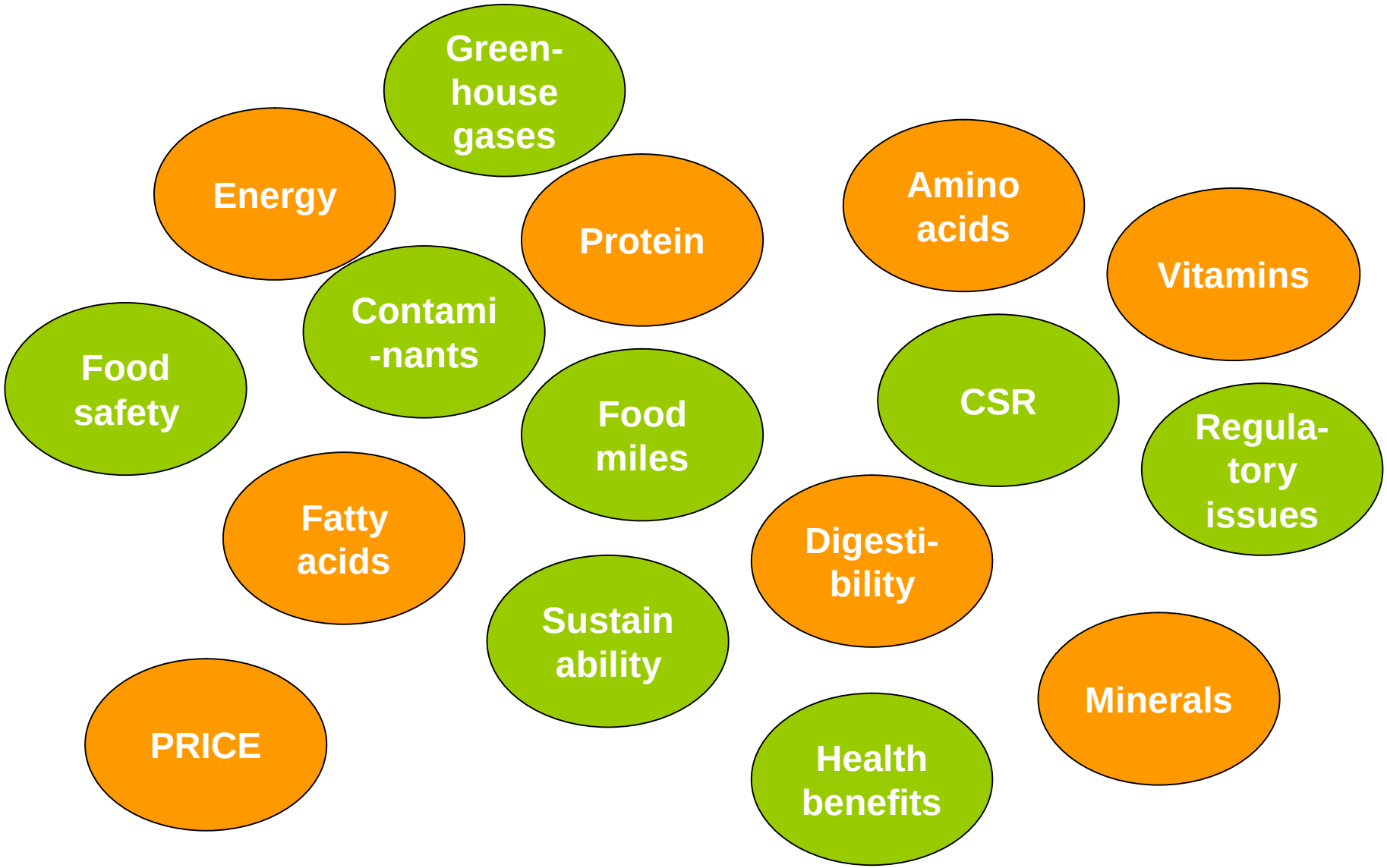
CSR

Regula-tory issues

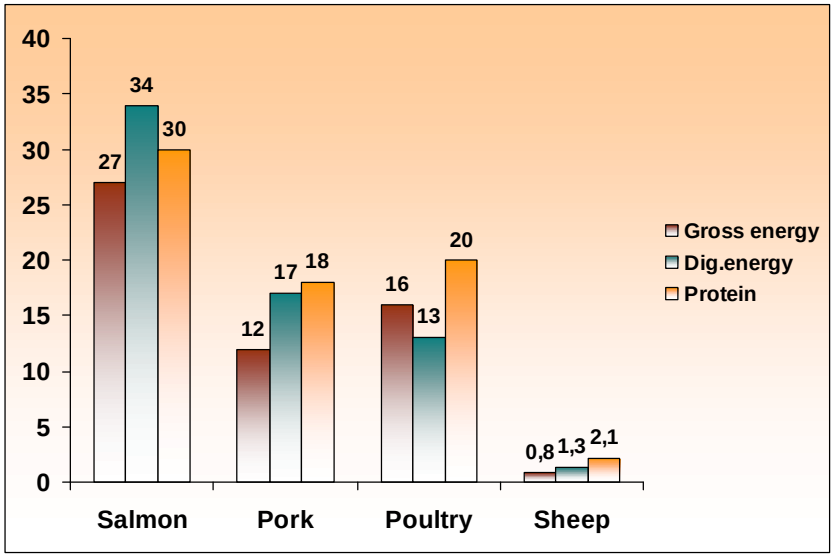
Sustain ability

Health benefits

Feed ingredients; now we look for:



Farmed salmon, the most effective farmed animal



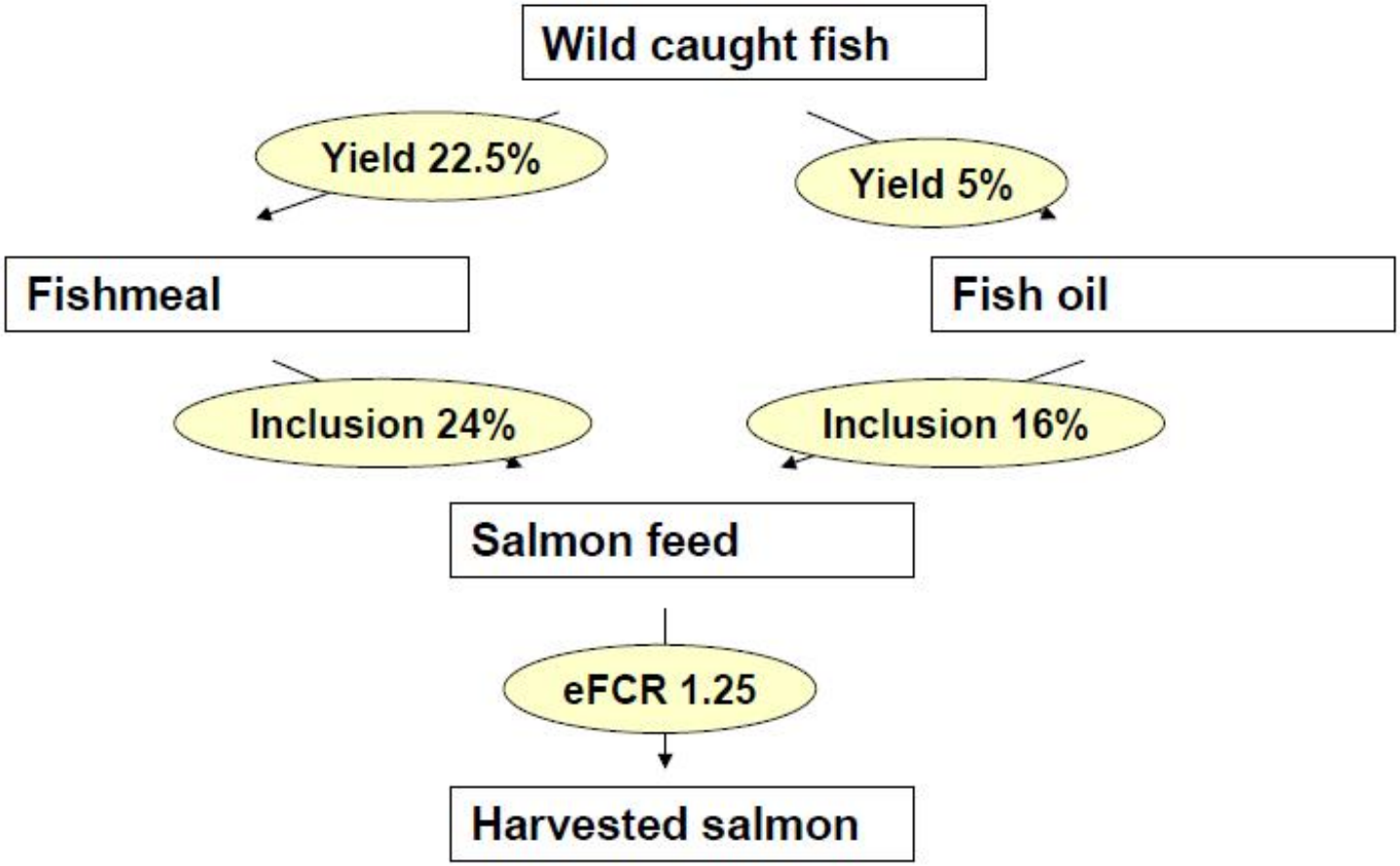
Nutrient and energy retention in salmon, compared with other farmed animals (Austreng 1994)

- We have by far the most effective food conversion in farmed salmon
- Why should we not use fish where it is best utilized?
- We could turn around and state that not using fish meal for farmed salmon is unsustainable?

Demonstration of salmon farming as a net producer of fish protein and oil.

Crampton, Viv; EWOS Innovation
Nanton, Dominic; EWOS Innovation
Ruohonen, Kari; EWOS Innovation
El-Mowafi, Adel; EWOS Innovation

Fish In to Fish Out ratio Calculation method.



Assumptions

These assumptions are taken from Tacon & Metian paper, 2008

Svakheter

- § FIFO bestemmes alene av fiskeolje bruk
  - Ingen insentiv til til å redusere fiskemelbruk
- § Fiskerråstoff varierer fra 5 til 15 % i fett
  - FIFO vil kunne variere 3 x av denne grunn
- § FIFO favoriserer magre fiskeslag fra oppdrett
- § FIFO sammenlikner ikke epler og epler
- § FIFO tar ikke hensyn til helsegevinsten i fet fisk

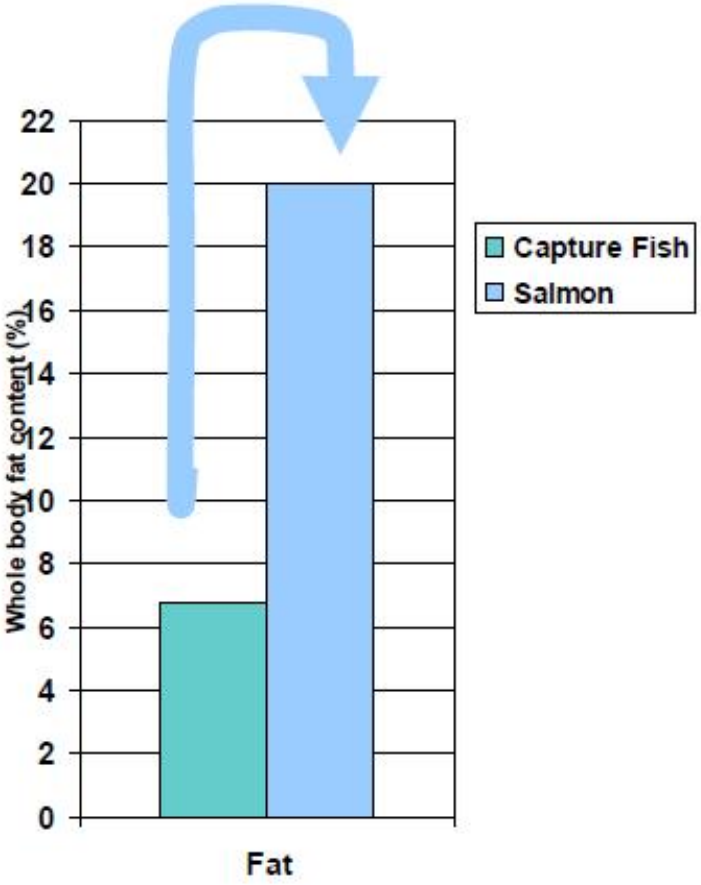
Easy to correct these deficiencies.

- Measure marine nutrients in and out
  - Not weight of fish in and out
- Measure protein component and oil component separately.

$$\text{Marine Protein Dependency Ratio} = \frac{\text{kg marine protein used}}{\text{kg marine protein produced}}$$

$$\text{Marine Oil Dependency Ratio} = \frac{\text{kg marine oil used}}{\text{kg marine oil produced}}$$

Salmon are three times higher in fat than the average fish used in fishmeal production.



- Capture fish about 7% fat, salmon about 20% fat (both as percent of whole body).
  - Protein contents similar.
- This is a three-fold difference
- Weight based measures ignore the increase in nutritional value.
- Nutrient based method include the difference. For salmon will be about 1/3rd the weight based method.

Marine protein efficiency in the history of farmed salmon